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HARD WORK CAN BEAT HARD TIMES— THE TELEPHONE BUSINESS

In good times and bad times it pays to keep working on the job. The business concerns that have plugged steadily ahead, refusing to be discouraged, are the ones that will emerge from the depression in good form. They will be *fit* because they have kept in training by the regular exercise and hard work characteristic of American business.

The telephone business is more immune from business sags than other industries, but the main reason it has stood up so well since 1929 is because telephone companies have worked hard. A four-line item in the Illinois Telephone Association's current bulletin says:

"1,256 sales in 60 days is the result of a 'Sell, Save and Serve' contest by the employes of the Illinois Southeastern Telephone Co., of Mattoon, and its associated companies. These results were obtained without the inducement of prizes to employes or offers of bargains to the public."

This is just one example of what enterprising telephone companies are doing to counteract slow business conditions, but it shows what work will accomplish.

* * * *

The record of the last three years shows also that to the old saying, "It pays to advertise," should be added the words, "especially during a depression." A survey made by the Department of Commerce at Washington of 358 industrial concerns which have successfully combatted the depression, discloses that "increased sales efforts" and "advertising policies" are responsible in most cases for this successful coping with hard times.

One paragraph of the survey says: "It is noteworthy that not one of the concerns which is included in this study as having been successful in combating the effects of the depression has diminished its sales efforts (which, of course, includes advertising) in order to save money."

The moral, of course, is that undiscouraged, intelligent effort brings certain rewards at all times. He who refuses to quit will fare better than he who "folds up" when the going is rough. In short, hard work will beat hard times.

A Good Business.

While no industry has found it "easy pickings" in recent years, telephone men should congratulate themselves on being in a business that has proved to be one of the most stable of all lines. It is human nature to magnify our own peculiar troubles, but an honest analysis of conditions will compel telephone companies to admit that they are fortunate compared to other industries.

While even the strongest concerns in the basic industries—such as steel, oil and railroads—have faced large losses and been forced to reduce their dividends, or pass them altogether, the telephone business has come through the slump with a surprisingly little variation from its normal showing.

According to the tabulation made by the Interstate Commerce Commission on November 1, the figures show that for the first ten months of 1931 gross revenues of telephone companies reporting to the commission indicated a loss of only 2.3 per cent, while the net operating income showed a gain of 1.8 per cent over the corresponding period of the preceding year.

This, of course, means that good management on the part of telephone companies has enabled them to steer a safe course. All business concerns in other lines have done their best to economize and keep down their losses, but few have been able to report an increase in their net operating income.

The reason for this difference lies in the peculiar stability of the telephone business, the essential value of its service to the public in good and bad times. This is an excellent thing for those in the business to remember when the going is difficult and they are inclined to become discouraged.

* * * *

Telephone men are fortunate in being engaged in providing a service that is a necessity and which is produced and consumed from day to day. They do not face the problems of manufacturers of commodities who must strive to produce their merchandise as cheaply as possible, and then have to pile it on shelves until it is sold.

Telephone service is provided for each day, and there is no over-supply to accumulate for disposal tomorrow. Today's

output is used today. Each morning finds the decks cleared for the new demands for what will be waiting to be offered for the convenience of the public.

This characteristic of the business has saved telephone companies from expanding their plants during boom times to take care of problematical still greater demands, as did many concerns in other industries which now find themselves with a large investment lying idle.

Of course, the telephone must always be ready to serve, but increased efficiency and developments of the art have enabled most service companies to meet requirements with a minimum expense. As general business conditions climb back to normal, these companies will be ready to take advantage of improvement.

The Tax Evil.

High taxes are worrying telephone companies as they are everybody else. The utilities have been a shining mark for the taxing officials during this era of government extravagance, and in most states have paid more than their share.

Because they are corporations using the public domain, or operating under a public franchise, they have usually stood the gaff without much protest. The politicians have victimized them on the theory that the average citizen was in favor of the platform: "Soak the corporations!"

The time has come in this country, however, when both business concerns and individual property owners must join hands to reduce governmental costs. Taxes must come down if industry is to exist and the citizen is to live according to American standards. The widespread political graft and extravagance that have raised the tax bill 1,200 per cent since 1913 is alone sufficient to account for the present economic conditions in this country.

Telephone men should be active in their communities to remedy this tax evil and cooperate with the nation-wide movement to hold down all forms of government expense. Agitation of this important matter in every local district will focus public sentiment on the critical need of the hour, and bring needed results.

* * * *

The report from Washington that the Treasury Department will recommend a tax on telephone toll and telegraph messages, to help meet the federal deficit, is not welcome news to telephone companies. While the loss of company revenues may not prove very serious—as the tax probably will be small—the necessity of keeping a record of the tax collected and reporting and paying the money to the government will mean more labor and expense to the companies.

The people generally would prefer that Uncle Sam met the emergency by cutting down on government expenses instead of adding another tax to present burdens.

COMING CONVENTIONS.

Minnesota Telephone Association, Radisson Hotel, Minneapolis, January 26, 27 and 28.

Nebraska Telephone Association, Hotel Paxton, Omaha, February 9-11.

Iowa Independent Telephone Association, Fort Des Moines Hotel, Des Moines, February 24, 25 and 26.

Texas Independent Telephone Association, Texas Hotel, Fort Worth, March 22, 23 and 24.

South Dakota Telephone Association, Sioux Falls, April 6 and 7.

Ohio Independent Telephone Association, Deshler-Wallick Hotel, Columbus, April 12, 13 and 14.

Kansas Telephone Association, Jayhawk Hotel, Topeka, April 19, 20 and 21.

Pennsylvania State Telephone & Traffic Association, Penn-Harris Hotel, Harrisburg, May 17 ,18 and 19.

Up-State Telephone Association of New York, Jamestown Hotel, Jamestown, May 25, 26 and 27.

Recent Changes in Toll Practices

History of Developing Methods of Handling Communication Traffic Up to Present High Standard of Service—Discussion of Changes in Toll Operating Practices—Address Before Traffic Conference at Recent National Convention

By Mrs. Mayme Workman,

Traffic Supervisor, Illinois Telephone Association, Springfield, Ill.

Communication, however crude, has always been of service to mankind. From the earliest days the bearer of messages has had the spirit of service which comes to us through the ages—"The message must go through."

From earliest times, methods of conveying intelligence swiftly to a distance have been universally known and utilized. Fires would seem to have been the first means of comparatively distant signaling. We read of them in the Bible in the book of Jeremiah, and in Greek and Latin literature; while their use in Hindustan and in Europe leaves no doubt as to their wide employment among civilized nations.

The transport of messages originated in the Orient. The dak-runners and mounted messengers, who speeded from post to post in the ancient days, foreshadowed a general postal service. We read of Cyrus the Elder, King of Persia, establishing a relay system in 559 B. C.; while China had such messengers in earliest historic times. The Indians in America, from the North to Cape Horn, still use lighted fires to announce their special tidings.

In the United States an inter-colonial postal service was gradually introduced along the coast, and in 1672 the colony of New York established a "post to go monthly from New York to Boston." From the earliest civilizations and for a number of years after the formation of the United States, the art of communication remained practically the same. It depended essentially on the use of beacon and smoke signals and on the speed of man, horse and sailboat.

A new era of communication was established in the year 1876 when Dr. Alexander Graham Bell invented the telephone; and since that time continual progress has been made in extending the range of telephone communication. The first long distance connection was established from Boston to Cambridge, Mass., on the night of October 9, 1876, when Dr. Bell conversed with his assistant, Thomas A. Watson, by means of an overhead line extending two miles.

The telephone was introduced for commercial use by the first business organization in 1877, and service was guaranteed for 20 miles only. This demonstration caused great excitement and really awakened the people of the nation to the possibilities of the telephone. From then on development was steady and certain.

In 1884 commercial service between Boston and New York was established. The opening of the New York-to-Chicago line on October 18, 1892, was an epoch-making event. In 1915, transcontinental service

was established between New York and San Francisco, 39 years after the first long distance connection was established.

In 1927, commercial wireless service across the Atlantic ocean was inaugurated between cities in the United States and Europe. In the same year connection was established with Mexico City. Transoceanic telephone service was extended to the principal countries of Europe in 1928.

Long distance in telephone language now means any distance up to a third of the way around the globe. In a broad sense, long distance reaches out beyond the limited areas of a local exchange and connects town with town, city with city, state with state, and even country with country.

The first long distance practices were put into force about the year 1900. From the first it was found necessary in toll work to make out a slip of paper or ticket so that a record could be had of each long distance call handled. Tickets were first made out at both ends of the line, which was known as the two-ticket method. This was later changed to the one-ticket method, because of the loss of operator and circuit time.

Collect calls were accepted from the start, as telegraph companies were accepting collect messages at the time and telephone companies had to compete. At first, no record was made of the work done, but later it was found necessary to do so. Accordingly, a code was figured out which, when placed on the back of the ticket, permitted the relief operator to know how far the call had progressed. This record was also used for accounting purposes and in dealing with customers who disputed charges.

Many changes have been made in operating practices as the volume of our business increased and the range of our service expanded. In the beginning of this year (1931) we received a complete revision of the toll operating practice. The aim of this revision has been to make the toll service as a whole more pleasing to the customer; to make it about as easy for him to place a call to a distant city as to a local number, and to remove every possible source of irritation.

The new practice contains instructions for handling calls under the combined line and recording method as well as instructions for handling multi-switch calls. The scope of the new practice has been broadened to include sections on reporting trouble, unsatisfactory transmission, service criticisms, as well as instructions for all of the many existing standard types of trunking and switchboard arrangements, including both manual and dial.

There is now greater need for uniformity between toll and local practices than heretofore. This resulted from the introduction of "A" switchboard handling of calls over toll switchboard circuits, the development of combined DSA and toll switchboards, the practice of re-training local operators for toll switchboard work and the maintenance of a toll reserve force. Therefore, existing differences have been eliminated wherever it seemed practical. Some of the more important changes contained in the revised toll operating practice are as follows:

RECORDING: In recording calls, verification of details is discontinued unless they are not understood. If the customer gives his call without hesitation, do not interrupt to verify any doubtful detail but wait until he is through. If he hesitates between details, verify any of which you are not sure at this time.

In Her Address Before the National Convention in Chicago Last Fall, Mrs. Workman Discussed in Detail the Recent Changes Made in Standard Toll Operating Practices.

If the calling party hesitates in giving his call, encourage him by saying, "Yes?" or, "Yes, sir?" in a questioning tone of voice. In other words, permit the customer to place his call in his own way, without interruption or unnecessary verification.

Three items are necessary on each call recorded: The name of the called place, the number or listing of the called telephone, and the calling number. It is no longer necessary to secure the name of the calling party except on collect, appointment, messenger, and hotel and P. B. X. extension CLR calls, but record the name if it is volunteered. Also record any additional information volunteered by the calling party whether or not this information is necessary to the completion of the call.

OVERLAP RECORDING: Overlap recording is used under certain conditions, meaning that the calling number may be secured as an overlapping operation. For example, if the calling party gives the terminating details first, ask the customer to hold the line before asking for the calling number, and his name if required. The call is advanced to the point where you have passed the call, and then ask for the calling number, and the name if required. Acknowledge the information received by saying, "Thank you."

If any delay is encountered in advancing the call—for example, an NC or an "all directory trunks busy" condition—or if the directory operator at your office acknowledges your request for a number by saying "right," we at once ask for the calling number, and the name if required.

On a multi-switch call, we may ask for the calling number while we are waiting for an answer from an intermediate toll center beyond the first. In any case, it is important to secure the calling number promptly enough so that the customer will not hang up his receiver before we have secured it.

Overlap recording and line work on a call from a manual office on which the calling line must be secured on a switching trunk should not be done unless you are locally authorized to do so.

ADDITIONAL INSTRUCTIONS: Unless otherwise specified, additional instructions are entered in the "Special Instruction" space. The following are examples:

(a) A request to quote the time and charge, at the end of conversation, "t&c" is entered in the "special instruction" space. If the request is for the charge only "chg" is entered.

(b) If the calling party requests to be notified after he has talked a stated period, enter "nfy" (stated period).

(c) A request on either a station-to-station or a person-to-person call that attempts on the call be delayed until a specified time without an appointment being made, enter "ag" (specified time).

(d) If the calling party will talk from the calling station but wishes the call charged to a third station, "recd & wt" (number of calling station) is entered in the "special instruction" space. The number to which call is to be charged is always entered in the calling telephone number space.

(e) If the calling party asks to have the call rushed we enter the word "rush" followed by the reason, if given.

CALLS RECEIVED FROM "A" OPERATORS: When the "A" operator passes a call to long distance, she uses a split-cord connection, saying, for example, "Chicago, Randolph 5678, check, Main 1234." The word "check" is omitted if the calling number is preceded by "attended," "Quote charges," "Notify three minutes," "Prepay," "Postpay," etc.

The word "check" is inserted between the called details and the calling details to guard against recording errors. The use of a word for this purpose was considered more effective than a mere pause since it identifies a call as one received from an "A" operator. The word "check" was chosen in preference to "called by" as being less likely to be mistaken for a digit of the calling number.

ENTERING CALLING LINE NUMBER

PASSED BY "A" OPERATOR: In reverse of the former practice, a calling line number passed without further details by an "A" operator is entered in the calling "Telephone Number" space and the number given by the customer, in the "Special Instruction" space. This change was made so that the call would be billed to the number from which it was received, which should tend to reduce billing errors though it has no particular advantage from a traffic standpoint.

HOLDING CALLING PARTY ON LINE: On a call which has been passed, as soon as it becomes evident that the call cannot be completed within three minutes from the filing time, or at the end of three minutes if further delay is anticipated, the calling party is given the option of hanging up his receiver or remaining at the telephone.

He is offered this option also, at the end of one minute from the filing time on a call on which routing or directory work, or both, are required and on which this information has not yet been obtained. This option is not offered on a call delayed by an NC condition.

DIRECTIONAL INFORMATION: Under the former practice, no directional information was passed with leave-word orders. It was passed with call orders and requests for the verification of "BY" and "DA" reports, but only when the report was to be routed to a position at which it would not be normally received; for example, a sequence, a hotel or an RX position.

According to our present practice, directional information is left in connection with all leave-word orders, call orders, requests for verification of reports, and calls requiring an IN ticket.

Some cases where directional information is used are as follows: Requesting verification of "BY" reports; called party going to another telephone; asking to have called party paged; leaving word at calling station; leaving word at called station; cancelling leave-word order; leaving LF call order; passing reports to OTC; passing call requiring "in" ticket.

Whenever we pass an operator number with a leave-word order, a call order, a request for the verification of a report, or a call on which we leave an "in" ticket, we enter the number, encircled, in the upper right-hand corner of the ticket. This practice assists the messenger or distributing operator in routing the ticket to the proper position. In addition, the number of the proper point-to-point position is entered on all other tickets sent to the point-to-point positions.

DISCONTINUED PRACTICES: The following are some of the discontinued practices:

(a) Encircling the operator's number on calls where CLR service has been given.

(b) Use of the code "rn."

(c) Entry "ay" in the called telephone number space.

(d) Entry "pers" in the called person space.

(e) Verification of "DA" reports.

HOLDING CUSTOMER AT THE TELEPHONE ON AN AG REQUEST: When a customer asks to have his call tried again and also when he reports himself ready to talk on an inward call, we ask him to hold the line. This practice was adopted so that the service given in such cases may be comparable with that given on a new call.

Because of the different offices, it was necessary to set up three distinct practices for handling "AG" requests: one for offices where recording and recording-completing trunks are multipled through both the CLR and point-to-point positions, or where the subscriber multiple appears at the point-to-point positions; another for offices having dial areas where recording-completing trunks are not multipled throughout the point-to-point positions or where no recording-completing trunks are provided; and still another for manual offices where recording trunks are not multipled throughout the point-to-point positions.

HANDLING WH REPORT: The new practice for handling a report that a called party is ready to talk on an inward call provides that the CLR operator who receives the report will hold the called party on the line, if the conditions are the same as those under which she would hold him on a new call; and that she will reach the point-to-point operator at the originating toll center, pass the WH report, and connect the called party to the toll circuit.

After the request has been passed to the originating toll center office, the operator at that office will assume full responsibility for dealing with the called party. This eliminates the divided responsibility which existed under the former practice. The average interval from report of WH to conversation or report has been reduced from 6.7 minutes to 2.2 minutes under the new practice.

LEAVING WORD ON PERSON-TO-PERSON CALLS: The present practice provides for leaving word on person-to-person calls, which involves asking the called party to notify a particular operator at the calling office when he is ready to talk.

The procedure of leaving an operator number aids in routing reports of all kinds to the proper position in the originating office and in locating the original ticket. It also gives a personal touch to the service which should be pleasing to the called party.

PRACTICES WHICH LIBERALIZE THE SERVICE: These practices are: (1) The discontinuance of report charges on reports that an extension telephone is busy, does not answer, or is out of order.

(2) Acceptance of requests to make a report charge collect even though the toll circuit has to be used again to secure the acceptance at the called station.

(3) In the case of cut-offs on station-to-station calls, getting the two parties who were talking into communication before restarting the timing instead of merely connecting the stations.

(4) The giving of service while the customer remains at the telephone, except a public telephone, on a call on which he has requested that the charge be transferred to a third telephone.

SIMPLIFIED TICKET NOTATIONS: Ticket records are abbreviated and simplified so that the progress of the call will not be delayed by the making of entries on the ticket. With the present speed of service, this is an important point. The following are some of the most important changes:

The double timing of reports is discontinued. The time a report is received is entered following the report. The time the report is given is not entered unless the minute changes between the received and the given times, in which case a line is drawn through the received time and the time at which the report is given is entered.

Ordinarily a line is devoted to each report received. However, in the case of reports of NC, BY, and "All trunks busy," the report is entered once and thereafter the received times only are entered, separated by a hyphen. If the report is not given to the calling station, a check-mark is placed over the received time unless the calling party is on the line and indicates in some way that he has heard it.

Reports received by an operator doing CLR work are entered on the face of the ticket, but all subsequent attempt times and reports received by the operators doing point-to-point work are entered on the back of the ticket. Any subsequent report is entered on the line with, and following, the subsequent attempt time. This practice serves to separate the combined line and recording record from the point-to-point record.

ENTERING OPERATOR'S PERSONAL NUMBER ON TICKET: The number of the operator who records the call is entered in the "operator" space; also the number of the operator who makes the attempt on which the call is completed or cancelled if she is not the one who recorded the call. In all other cases, the number is omitted.

TIME ALLOWANCE FOR HOLDING TOLL CIRCUIT: After a call, report, or order has been passed, the time allowance for holding the toll circuit waiting for an answer from the called station or a report has been increased from two to three minutes. This increase became desirable because of the new practice with respect to asking for a report on slow answer calls at the end of one and a half minutes.

After the called station has been reached on a call to a direct circuit point, the time allowance for holding the toll circuit waiting for a report or for the called party to come to the telephone is increased from two to three minutes.

For uniformity, after a WH report or a report requiring further instructions from the calling party has been obtained, the

time allowance for holding the toll circuit waiting to reach the called party to complete the call or to secure further instructions is also increased from two to three minutes.

SEPARATE REPORT TICKET FORM DISCONTINUED: With the new AG and WH party practices, the point in having a conspicuous report ticket form is practically lost. Therefore, this form has been discontinued.

The new "Out" ticket is used in its place, and the nature of the report, order, or request is indicated by printing the proper code or codes in capitals in the "Special Instruction" space. The use of a single form will save the expense and trouble of maintaining a separate supply.

USING PRESCRIBED PHRASES: According to the new practice we are permitted a somewhat broader use of phraseology in those cases in which it will help the customer to understand a report or will better express a personal interest in the service.

According to the old practice, when we were not permitted to deviate from a set phrase, customers were frequently annoyed by the operator's phraseology, when the phrase used did not give the customer the information he desired in such a manner that he could understand it.

ACCEPTANCE OF CANCELLATION ORDERS: A definite order to cancel a call is accepted without question. However, in certain cases in which the customer indicates clearly that he still wants the call but does not understand that the company will make further attempts to complete it, phrases are provided to assist the operator in giving the customer this information.

"WH PARTY REPORTS RECEIVED ON CANCELLED CALLS: The former practice provided that when a WH party report was received on a cancelled call, if it was after 10 p. m., the operator should tell the called party that the call had been cancelled and give the report to the calling party only when the called party insisted upon it.

The new practice makes this rule effective at all times, 24 hours of the day, in an endeavor to remove a possible source of annoyance to customers.

CLEARING BUILT-UP RINGDOWN TRUNKS: A verbal clearance order is now required on a built-up ringdown trunk as on a built-up toll circuit.

LEAVING AND COMPLETING "ALL TRUNKS BUSY" CALL ORDERS FOR RINGDOWN TRUNKS: An "All trunks busy" call order is left at the TTC when a report is received that all the trunks to an office reached over ringdown trunks are busy. The practice for completing "all trunks busy" call orders is modeled on that for reaching a busy called line at a built-up circuit point, although the two practices are not identical.

For example, at the end of five minutes if the call order has not been completed on an "all trunks busy" report, the ticket is sent to the proper point-to-point position and further attempts are made at that position to secure a trunk and to reach the called station, until the call order is completed or cancelled. Because ringdown trunk groups are usually small and often heavily-loaded, this practice seems more satisfactory than the former.

COMPLETING SLOW ANSWER CALLS: When a report of DA is received, the operator does not give the report to the calling party even if he is holding the line, but at once asks to have the connection changed, holds the calling party on the line, and gives him a DA report only if a confirming report is received. This eliminates the annoyance caused the customer by being recalled about a minute after being released to be given a confirming report.

At the end of 1½ minutes (instead of one minute) after a call has been passed, if the OTC operator has not received an answer from the called station or a report of DA, she asks, "Is the number DA?" instead of passing an AG order as in the former practice. The same procedure is followed after the operator has asked to have the connection changed.

The practice of having the connection changed when a report of "DA" is received is followed on each attempt instead of on the first attempt only, as formerly.

REDUCING THE NUMBER OF SUBSEQUENT ATTEMPT INTERVALS: The former schedule of subsequent attempts specified various intervals—10, 15, 20, or 30 minutes and one hour or two hours, depending upon the report received. This complicated the memorizing of the schedule. According to our new instructions only two subsequent attempt intervals are specified—20 minutes or one hour.

As an exception, the first, second and third subsequent attempts to secure a busy called line or a busy toll switching trunk at a direct circuit point are made at three, six and nine minutes, as formerly.

Most companies, I believe, have adopted and are following standard operating methods. The day is past when each company can operate according to its own ideas. Transportation is rapid and people traveling by rail, automobile and by airplane have occasion to use long distance service in several towns, cities or even states in one day. They want to meet with the same practices and hear the same phraseology in some little village along the highway as they do in Chicago, New York or Boston.

Uniformity of operating methods makes the use of the telephone for long distance service a simple process for telephone users which increases our toll business.

So let us resolve not to be like the people in the olden days who tried to build the "tower of Babel" They failed because they spoke in divers tongues. On the contrary, let us adopt a universal telephone language that is understood by telephone users all over the United States. We can do this if we adopt "standard operating practices."

Beware of "Bad" Mornings.

Everyone has bad mornings, hates to hear the telephone ring, or to see the office door open. I beg of you, when next you meet such a morning, take a stick of dynamite and blow up one of our plants. But do not take it out on a customer of General Electric.

We can replace the plant you have destroyed; we know its value; we have a reserve from which we can rebuild. But we cannot measure the goodwill you have destroyed, and we can never know if we have replaced it.—Owen D. Young, in address before a group of General Electric Co. employes.

New Telephone Directory for Vancouver, Canada.

The British Columbia Telephone Co. in Vancouver, Canada, publishes its city telephone directory twice a year, May 1 and November 1. The November issue this year offers a radical change from the previous form, and adopts a style generally used in larger cities of the United States.

The book has been vastly improved by the adoption of the most up-to-date features of telephone directory make-up. The size of the pages has been increased to 9 inches wide by 11 inches deep, the listings have been set in larger and more legible type and the columns are wider.

The cover is an attractive brown shade, with dark brown ink used for printing. The information pages at the beginning of the book have been re-designed to make them more useful from a reference standpoint, and the classified section, printed on yellow paper, has also been greatly changed to make it more efficient as a guide to buyers.

Two volumes totaling 102,000 copies are issued., One covers "Greater Vancouver" and the other is for "New Westminster and Lower Fraser Valley Points."

Operator Discovers Fire Through Investigation of Signal.

Recently, in Vernon, British Columbia, Can., the night operator of the Okanagan Telephone Co. received a signal but upon answering it, failed to get a reply. She listened in and heard a crackling sound.

Not getting an answer to her second call, she telephoned the police and asked them to investigate. A blazing fire in a cleaner's establishment was discovered and the fire department was almost immediately upon the scene.

The heat from the fire, it was stated, had melted the shoulder of the receiver case enough to let it slip through the hook, thus causing the signal to reach the operator. Her quick action resulted in the fire department saving the whole building and only a small loss of $200 was sustained in the cleaning establishment.

Approval of Tri-State Purchase Denied

Interstate Commission Denies Approval of Purchase by Northwestern Bell Company of St. Paul, Minn., and Contiguous Exchanges of Tri-State Company as not in Public Interest—Proposed Price Greatly Exceeds Stock Equity in Property

The Northwestern Bell Telephone Co. has been denied permission by the Interstate Commerce Commission to acquire control of the Tri-State Telephone & Telegraph Co. of St. Paul, Minn., by purchase of the capital stock. The case was decided on December 30 and the order was made public on January 9.

In the opinion of the commission the price proposed to be paid for the common stock of the Tri-State company is so greatly in excess of the equity in the properties represented by that stock as not to be in the public interest. The proposed price, it is stated, exceeds the equity in the properties represented by the stock by nearly $9,000,000.

In the same order the Interstate Commerce Commission dismissed the application of the Northwestern Bell company for a certificate that the acquisition by it of certain toll properties of the Dakota Central Telephone Co. will be of advantage to the persons to whom service is to be rendered and in the public interest. The carrying out of the contract for the purchase of these toll properties was contingent upon the consummation of the Tri-State purchase.

The two applications (Northwestern Bell in Tri-State capital stock purchase, Finance Docket No. 8923 and Northwestern Bell in Dakota Central toll property acquisition, Finance Docket No. 8924) were heard together, and both were disposed of in the Interstate commission's report.

Opposition to Purchase.

The city councils of St. Paul and South St. Paul adopted resolutions opposing the proposed transfer of the stock of the Tri-State company and requested that the Interstate commission refuse approval pending a hearing on the question of valuation and rates which was then assigned before the Minnesota Railroad & Warehouse Commission on December 1, 1931. A similar request made by an individual to the Minnesota commission in the proceeding before that body was denied.

The Minnesota commission has entered an order authorizing the proposed acquisition upon the condition that the Northwestern Bell company make certain reductions in rates and service changes, which it is estimated will effect a saving of about $300,000 a year to the telephone users in St. Paul and Minneapolis. The Northwestern Bell company has filed its acceptance of the terms imposed.

Other companies mentioned in the record will be referred to hereafter as follows: The Minnesota & Dakota Telephone Co. as the Minnesota company; the Midland Trading Co. as the Midland company; and the Telephone Bond & Share Co. as the Bond company. All the corporations mentioned in the report, except the Northwestern Bell, are controlled by the so-called Gary interests of Kansas City, Mo.

Companies Concerned in Transaction.

The Northwestern Bell company owns and operates a telephone system in Iowa, Nebraska, South Dakota, North Dakota and Minnesota. The Tri-State company owns and operates a system of exchanges and toll lines in southern Minnesota, including exchanges at St. Paul, Stillwater, White Bear, Lindstrom and Forest Lake, which collectively serve 76,107 subscriber stations, of which 72,068 are in St. Paul. It also owns practically all of the common stock of the Dakota Central company.

The Consolidated company is a holding company and has practically no assets except 99,198 shares of the common stock of the Tri-State company out of a total of 100,000 shares.

The Dakota Central company owns and operates a system of telephone exchanges and toll lines in central and eastern South Dakota and south central North Dakota.

The Minnesota company has no property or assets, but if the sale and purchase of the capital stock and property involved in the instant applications were consummated, it would acquire from the Tri-State company extensive exchange and toll properties in southern Minnesota, as well as the common stock of the Dakota Central company.

The Midland company is a holding company, and if the sale and purchase of the capital stock and property involved were authorized, it would become the owner of all of the capital stock of the Minnesota company.

The Bond company is a holding and managerial company which controls the major part of the telephone properties of the so-called Gary interests.

Interstate Commission's Report.

The report of the Interstate Commerce Commission on the two applications follows in full:

"An appraisal made by the appraisal engineer of the Northwestern Bell company, as of August 31, 1930, finds the reproduction cost of the properties of the Tri-State company to be $19,061,541, and less depreciation, $17,282,105. To the latter amount there is added an item of $2,121,550 for organization expenses and going value.

Telephone operating revenues of the Tri-State company for the years shown were: 1928, $5,602,714.51; 1929, $5,790,933.24; 1930, $5,840,206.95; six months ended June 30, 1931, $2,878,737.63. Telephone operating expenses for 1928 were $3,563,691.63; 1929, $3,717,991.85; 1930, $3,987,209.26; six months ended June 30, 1931, $1,925,340.63.

The general balance sheet of the Tri-State company, as of June 30, 1931, showed fixed capital installed $22,636,875.39; stocks of system corporations, $4,651,168.51; advances to system corporations, $72,550; working assets, $1,221,456.37; deferred debits, $211,462.54; common stock, $7,000,000; preferred stock, $6,362,090; premiums on preferred stock, $37,500; long-term debt, $8,500,000; working liabilities, $1,108,593.10; accrued liabilities (not due), $521,830.56; other deferred credits, $2,944.73; reserve for accrued depreciation, $4,335,771.49; other reserves, $55,107.55; surplus and undivided profits, $869,675.38.

The 99,198 shares of the common capital stock of the Tri-State company owned by the Consolidated company were purchased by the latter company with funds loaned to it by the Northwestern Bell company, evidenced by 6 per cent notes, and secured by all of the Tri-State stock which the Consolidated company owns. These notes are payable on or before February 15, 1933.

The sums advanced by the Northwestern Bell company to the Consolidated company were loaned to the Northwestern Bell company by its principal stockholder, the American Telephone & Telegraph Co.

Proposed Actions.

"In the event that the acquisition of the common stock of the Tri-State company and the acquisition of the toll lines from the Dakota Central by the Northwestern Bell company is not authorized by us and other regulatory bodies having jurisdiction, the Bond company agrees, within two years, to purchase the notes of the Consolidated company from the Northwestern Bell company at par, plus accrued interest, for cash. The Bond company is represented to possess very large assets. Its undertaking to purchase the notes was underwritten by the principal Gary associates, individually.

If the authorizations requested are granted, the Tri-State company, before its stock is acquired by the Northwestern Bell company, will divest itself of all its property except its exchange and toll system in Ramsey, Washington, Dakota, Anoka and Chisago counties, Minnesota, and such of its principal toll lines as are used or useful for carrying toll traffic into, out of, or across the remainder of its territory. It will do this by transferring its other properties and the capital stock of the Dakota

Central and minor subsidiaries to the Minnesota company.

In return for the properties transferred to it, the Minnesota company will issue to the Tri-State company all of its capital stock and will incur no other capital obligations. The Tri-State company will sell this stock to the Midland company for $8,800,000, subject to adjustments for additions and retirements to property account subsequent to the date as of which the price was fixed. The Northwestern Bell company has assented to the price.

The Midland company will give its own notes to the Tri-State company for the stock of the Minnesota company, which notes will be payable on or before three years from date, with interest at 6 per cent, and will be secured by the pledge of all the stock of the Minnesota company.

The properties to be retained by the Tri-State company when the Northwestern Bell company acquires its common stock are the exchanges at St. Paul, White Bear, Stillwater, Lindstrom, and Forest Lake; a 100 per cent ownership of 847 pole miles of toll lines; a 50 per cent ownership of 340 pole miles of toll lines, the other 50 per cent to be owned by the Minnesota company; and a 100 per cent ownership of 10,802 miles of toll aerial wire. The Minnesota company will have toll circuits on all these pole lines.

The price to be paid by the Northwestern Bell company to the Consolidated company for the 99,198 shares of the common stock of the Tri-State company is $19,510,101, which is the amount the Consolidated company paid for the stock. This is a price of $196.67 a share. The Northwestern Bell company proposes to make this payment by cancelling and surrendering all notes which the Consolidated company gave to it for the money borrowed from the Northwestern Bell company to purchase the stock.

The 6 per cent interest on the notes given by the Consolidated company to the Northwestern Bell company for the money borrowed has been provided for as follows: The Consolidated company pays to the Northwestern Bell company to apply on such interest, all dividends received by the Consolidated company on the Tri-State stock. The balance of the interest is evidenced by interest notes.

If the purchase of the stock is authorized and consummated, these interest notes are to be cancelled; and in that event the amount of interest which the Northwestern Bell company will have received on the money which it loaned to the Consolidated company, will be limited to the dividends which the Consolidated company will have received from the Tri-State company.

If the transaction is not authorized and the stock is not purchased, so that the Consolidated company will be required to pay the principal notes in cash, the interest notes will remain in full force and the Consolidated company, or the Bond company, if it purchases the notes, will then be required to pay the full 6 per cent interest for the period of the loan.

In connection with the performance of the various transactions above referred to, several contracts were entered into by the interested parties.

One of these contracts, made November 17, 1930, recites that the Northwestern Bell company had theretofore loaned to the Consolidated company $17,833,950, evidenced by promissory notes of the Consolidated company and secured by the deposit, as collateral, of 90,630 shares of the common stock of the Tri-State company; and the Northwestern Bell company agreed to loan to the Consolidated company such amounts, not exceeding $1,659,922, as might be required for the purchase of not more than 8,668 additional shares of the common stock at not exceeding $191.50 a share.

The Consolidated company agrees to use all lawful means to cause the Tri-State company to enter into contracts with the other Gary companies for the performance by them of the various undertakings hereinabove referred to, and to transfer the stock of the Tri-State company to the Northwestern Bell company within 90 days after all required governmental sanctions are obtained. Under this contract the Consolidated company purchased or contracted to purchase 4,349 additional shares.

By a further contract between the same parties, made December 13, 1930, the Northwestern Bell company agreed to loan the Consolidated company such additional amount, not exceeding $863,800, to enable it to purchase all or any part of the remaining 4,319 shares at a price of not more than $200 a share.

Dakota Central's Toll Lines.

"By a contract dated July 16, 1931, a copy of which is attached to the application in Finance Docket No. 8924, the Dakota Central company agreed to sell and the Northwestern Bell company agreed to buy the through toll lines in the Dakota Central territory, the price to be the book cost of the property at the date of transfer, to be paid in cash.

The contract was made subject to our authorization and provides that it shall not be binding unless and until at least 94 per cent of the common stock of the Tri-State company has been acquired by the Northwestern Bell company. It is not contemplated that the Dakota Central proposal will be carried out unless the acquisition of the Tri-State stock is authorized and consummated.

The properties to be sold by the Dakota Central consist of 1,206 pole miles of toll lines, and 5,382 miles of toll aerial wire. The Dakota Central would have toll circuits on practically all these toll lines.

The price to be paid by the Northwestern Bell company for the properties to be purchased from the Dakota Central is $1,078,000, with adjustments for net additions or retirements from October 31, 1930, to the date of transfer. An appraisal of the properties, as of October 31, 1930, finds the reproduction cost to be $1,166,168, and less depreciation $1,073,354.

Transactions Proposed.

"The following transactions are to take place at the same time and date, as nearly as may be:

(1) Transfer of the southern Minnesota property and the Dakota Central stock from the Tri-State company to the Minnesota company.

(2) Issue of the Minnesota company's stock to the Tri-State company.

(3) Sale of the Minnesota company's stock by the Tri-State company to the Midland company.

(4) Sale of the Dakota toll lines by the Dakota Central to the Northwestern Bell company.

(5) Sale of the Tri-State company's stock to the Northwestern Bell company. The latter transaction is contingent upon the performance of the transactions embraced in parentheses 1 to 4, above.

There is no duplication of property involved in these cases, nor will there be should the various transactions be consummated. No property will be retired from service as useless and there will be practically no expense to unify the properties.

If the acquisitions of control applied for are granted and the various contracts performed, the situtaion will be as follows: The Northwestern Bell company will own practically all the common stock of the Tri-State company and the through toll lines in the Dakota Central's territory; the Tri-State company will own the St. Paul exchange, the four tributary exchanges heretofore mentioned, the through toll lines in southern Minnesota, and notes of the Midland company, secured by all the stock of the Minnesota company, in the amount of approximately $8,800,000.

The Midland company will own all the stock of the Minnesota company, subject to the pledge to the Tri-State company to secure the $8,800,000 of notes; the Minnesota company will own 26 exchanges, an

SAFETY DOCTRINES.

By John A. Bracken.

Taking Chances.

Many young men in the telephone industry, especially in plant work, meet with accidents because they are daring, adventurous, fun-loving, heedless of danger and ever ready to take chances.

The elimination of carelessness, thoughtlessness and indifference in the performance of one's tasks is essential to the elimination of accidents.

extensive intra-territorial toll system in southern Minnesota, practically all of the common stock of the Dakota Central, and stock of minor subsidiaries; the Dakota Central will own 108 exchanges and extensive intra-territorial toll lines in its present territory.

As disclosed by the record the price to the Northwestern Bell company of the stock of the Tri-State company, as compared with the value of the equity represented by that stock, is as follows:

Appraised value of physical property to be retained by the Tri-State company		$19,403,655
Notes of Midland company		8,800,000
Other assets (principally cash and accounts receivable)		1,600,272
Total assets of Tri-State company		$29,803,927
Less liabilities prior to common stock:		
Preferred stock	$6,362,090	
Funded debt	8,500,000	
Other liabilities (principally bills payable and current liabilities)	2,029,764	
Total deductions		16,891,854
Value of equity represented by the total common stock of the Tri-State company		12,912,073
Value of equity represented by the 99,198 shares to be purchased by the Northwestern Bell company		12,808,509
Price to be paid by the Northwestern Bell company for 99,198 shares of common stock		19,510,101
Excess of price over the value of the equity in the properties		6,701,592

In this computation the appraised value of physical property to be retained by the Tri-State company includes the sum of $2,121,550 for organization expenses and going value. This amount is 11.13 per cent of the reproduction cost. This is the percentage found by the Minnesota commission in the last rate case which the Tri-State company had before it.

Should the sum allowed for organization expenses and going value be deducted, the excess of price to be paid over the equity in the properties represented by the stock to be purchased would be increased to $8,823,142.

Minneapolis, with a population of 461,000, and St. Paul, with a population of 271,000, adjoin each other on a boundary of nearly seven miles. For about one-half of this distance the boundary is the Mississippi River. For a considerable portion of the distance the cities are built up solidly to the river banks, so that it is impossible to tell where one city ends and the other begins. There are over 2,000 circuits connecting the telephone system in St. Paul with that in Minneapolis, over which about 23,500,000 calls pass annually.

Twin Cities One Exchange Area.

"From a plant and engineering standpoint the St. Paul and Minneapolis telephone properties constitute one telephone exchange. In the ordinary situation connections with exchanges in other cities are established by means of a single group of toll trunks connecting one office in each city with one office in the other. The Minneapolis and St. Paul telephone plants are connected together and interwoven as if they were a single telephone exchange.

Each of the 16 central offices in Minneapolis is connected with each of the 9 central offices in St. Paul by a group of trunks. There are 144 groups of trunks connecting central offices in Minneapolis with those in St. Paul.

The plans for the Minneapolis and St. Paul exchanges must be made as a unit if proper transmission is to be obtained at minimum cost, and failure to coordinate these plans would mean that the two cities would ultimately be served by a plant much more costly than necessary and which would give unsatisfactory service.

The problem of operating the two properties requires the closest coordination. The same operating practices must be observed if delays and inefficiency are to be avoided. Changes in these practices are made frequently and are sometimes of much importance in their effect on cost and quality of service. As the two operating forces must work together, changes must be made in both cities simultaneously if serious complications are to be avoided.

Almost everything done in one city reacts on the telephone situation in the other city, and, therefore, the most complete coordination is essential. Fairly satisfactory coordination has been attained in the past, but this has been at the expense of great effort and long delays. Coordination is difficult, both because of differences of opinion and the conflict of financial interest between the two companies.

Coordination Problem of Future.

"As the two cities continue to grow, the difficulty of coordination is increasing and the problem appears likely to be much more serious in the future than it has been in the past. If the St. Paul exchange should pass under the control of men whose primary interest was in finance rather than in a long-time operation of a telephone plant, the Northwestern Bell company considers that the resulting situation would be intolerable to it.

The Northwestern Bell company further alleges that the existence of the St. Paul exchange under separate management constitutes a serious hazard to its large investment in its Minneapolis properties.

The making of proper toll terminal arrangements for St. Paul and Minneapolis has presented a serious problem. There is a separate toll switchboard in each city connected by toll trunks with each central office in the city. The toll board in each city is connected with the toll board in the other city by toll trunks. There are 123 direct circuit groups of toll lines terminating on the Minneapolis board and only 42 such groups terminate on the St. Paul board. Most of the St. Paul groups are to comparatively nearby points.

A large part of the toll business into St. Paul must first come to Minneapolis and there be switched to St. Paul. As the speed of establishing toll connections depends to a great extent on having direct circuits without switches, it is highly undesirable to continue this additional switch between Minneapolis and St. Paul, but the two managements have never been able to agree upon a plan for avoiding it. The toll service into St. Paul cannot be brought up to the standard in effect elsewhere until this situation is remedied.

To avoid waste and inefficiency the exchanges at Stillwater, White Bear, Forest Lake and Lindstrom should be owned and operated by the same company which owns and operates the St. Paul properties.

Advantages to Toll Users.

"The acquisition of the through toll lines in southern Minnesota and in the Dakotas by the Northwestern Bell company would benefit toll users within those areas and also toll users all over the United States who have occasion to talk with people in those areas or whose messages pass across them. Existing toll connections with other Independent telephone companies will not be disturbed. No change in toll rates is contemplated.

At the hearing communications from a large number of business organizations and telephone users in Minneapolis, St. Paul, and other parts of the territory served by the Tri-State and Dakota Central companies were introduced in evidence, indorsing the proposed acquisitions.

The North Dakota Board of Railroad Commissioners has issued a certificate authorizing the applicant to acquire the toll lines of the Dakota Central located in that state. The applicant represents that the South Dakota Board of Railroad Commissioners does not have jurisdiction over the sale of the toll lines in that state which are involved in this proceeding.

Prior to 1918 the Northwestern Bell company and the Tri-State company were in competition, each having an exchange in St. Paul and in Minneapolis. In that year the Northwestern Bell company sold its property in St. Paul to the Tri-State company; the latter company sold its Minneapolis property to the Northwestern Bell company, and the exchanges in each city were consolidated.

Unification of Benefit.

"Experience since that date in operating the Minneapolis exchange separately from the St. Paul exchange has convinced the officers of the Northwestern Bell company that unified ownership and operation are essential. It appears clearly from the record that the proposed acquisition would be of advantage to the persons to whom service is to be rendered, both by reducing the cost of telephone service and by improving telephone facilities.

The Northwestern Bell company is, and

if it acquires control of the Tri-State company will continue to be, subject to the interstate commerce act.

As heretofore shown the price which the applicant proposes to pay for the stock of the Tri-State company exceeds the value of the equity in the properties represented by that stock by nearly $9,000,000. The applicant argues that whatever loss there is in the transaction must be borne by its common stockholders, which is the American Telephone & Telegraph Co.; and that in the absence of any objection by the stockholders, the question of what price should be paid would seem to be one for the management of the company.

It is further urged that the price paid for the stock could not be made the basis for an increase in rates, because the rates are subject to the control of the Minnesota commission and would be based on the value of the Tri-State company's properties.

The officers and directors believe that the long-time interest of the stockholders and the public will best be served by removing handicaps which prevent the giving of the best service at the lowest ultimate cost, and by clearing the way for the further improvement of service. They believe that this course will promote public confidence, than which there is no better safeguard to the security of the stockholders' interest; and that the proposed purchase would be a wise and farsighted investment for the company and its stockholders.

It represents that the difference between the price it proposes to pay for the capital stock and the value of the equity in the properties represented by the stock, will be amortized over a period of years.

In our opinion the payment of a price for the common stock of the Tri-State company so greatly in excess of the equity in the properties represented by that stock will not be in the public interest. An order will be entered denying the application in Finance Docket No. 8923.

The contract for the purchase of the toll properties of the Dakota Central provides that it shall not be binding unless and until at least 94 per cent of the common capital stock of the Tri-State company has been acquired by the Northwestern Bell company; and the applicant represents that it is not contemplated that the proposed purchase of the Dakota Central toll lines will be carried out unless the purchase of the stock of the Tri-State company be authorized and consummated.

It, therefore, appears unnecessary to further consider the application in Finance Docket No. 8924 and such application will be dismissed. An appropriate order will be entered."

Versatility Was a Necessary Quality in Early Telephone Operators.

Mrs. May Frost, formerly Miss May Gaylord, of Geneva, N. Y., vividly recalls the multiplicity of duties which soon evolved upon her shoulders 51 years ago, when at the age of 12 she became that city's first telephone operator.

She had a small switchboard with a few subscribers. Gradually, however, her assignments consisted not only of handling the switchboard, but keeping the books, cleaning the batteries in the office, replacing the batteries at subscriber stations and collecting the rentals.

She prepared herself for the bookkeeping work by studying at night school, when she had completed her day's work.

In those days, when a subscriber in Syracuse wished to talk to a party in Rochester, she explained, the message was given to the Geneva operator and then repeated to the Rochester party.

At the time Mrs. Frost left the telephone office, after nine years of faithful service, she was the oldest operator in service between Syracuse and Buffalo. And of her at that time the Geneva Gazette said: "There is no one along the line from New York, Boston and Buffalo who is better or more popularly known."

What Operators Want to Know

Service Criticisms Should Be Used to Create Favorable Impression of Company—Criticisms Justified From Customer's Point of View—Commendations Encourage Operators to Greater Effort

By Mrs. Mayme Workman,

Traffic Supervisor, Illinois Telephone Association, Springfield, Ill.

Every office, regardless of the efficiency of its operating force, receives service criticisms. Every office also receives commendations, according to the efficiency of the operating force and the type of customers served.

The occasion of a criticism should be used as an opportunity to create a favorable impression of the company, its methods and its personnel. The following factors are especially important in giving this impression:

(1) A courteous acknowledgment of the criticism, when received.

(2) A speedy and satisfactory investigation of the feature criticized.

(3) Application of practical measures to correct any defect and to give an explanation of the facts of the case which will be satisfactory to the telephone user. In this connection it is especially important that a report be given to the user if he calls a company representative and the case cannot be definitely and satisfactorily handled while he remains at the telephone.

(4) Precaution that all reports rendered to the telephone user are accurate.

The person receiving or handling a criticism should hold the point of view and accept the fact that criticisms are justified from the telephone user's point of view. As a general principle, the telephone user who expresses dissatisfaction with the service has received or is receiving poor service. In either case the criticism enables us to check the cause of the trouble and to take steps to prevent its recurrence insofar as it is possible, and thereby place the service on a satisfactory basis.

In certain instances criticisms arise as a result of telephone users neither understanding nor appreciating the conditions under which telephone service is given; and they are, therefore, unable to make proper allowance for occasional and unavoidable errors. In such instances, by receiving the user's expression of opinion, the person handling the criticism is able to give him an insight into the telephone work.

Always allow the customer to give his comments without interruption and avoid annoying or delaying him by asking unnecessary questions. However, ask such questions as are necessary to make clear the nature of the criticism or to identify the call so that it will not be necessary to recall the customer before adjusting his complaint.

It is desirable to dispose of criticisms, as far as possible, at the time you receive them. However, if you cannot dispose of a criticism at that time, assure the customer that you will give it prompt attention.

If a customer commends the service, thank him for the trouble he has taken to express his satisfaction, and assure him that the employe concerned will be greatly pleased to know that her efforts to serve have been successful.

The chief operator should make good use of the service criticisms received. They are helpful in finding the weak spots in the operating force. The commendations, too, should be put to good use. Pass them along to your operators. It will help and encourage them to put forth greater effort.

Questions from Illinois Operators.

1. Is a messenger call always person-to-person?
2. What are the six salient features of voice work?
3. Should an operator insist that a doctor give a number when she has reason to believe he is in a hurry?
4. What is the advantage gained by passing a call to the distant office before getting the calling station number?
5. Is it necessary that the chief operator speak to a subscriber personally concerning a complaint or misunderstanding?

For answers to these questions from real Illinois operators, turn to page 29.

Outside Plant Men Talk Things Over

Excitement in a Manhole in the Early Telephone Days.

By An Old Cable Splicer.

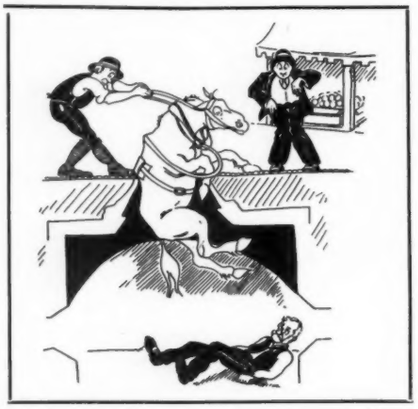
I claimed that as a cable splicer of the old school I had some mighty exciting experiences and I guess it is now up to me to make good. You may claim that I am a better liar than I was ever a cable splicer, but I can truthfully say that every word of this yarn is true. I might tell a lie occasionally but not for publication.

One day I was stooped over working in a manhole when all of a sudden I heard a terrible commotion and thought the world had surely come to an end. A shower of scrap cable, bars of solder, tools and what not rained down on my head and I naturally ducked as low as possible. A grunt, a few groans, then it suddenly became dark in the manhole and something started fanning the air close to my left ear. I thought, "yes, the world has come to an end; and here I am caught in the wrong place, just as I expected."

The groans continued as I could hear them between my yells and the fanning of the air seemed to be coming closer. Something had filled the manhole so snugly as to cut off all light and most of the air. To say that I was scared is putting it mildly. After what seemed hours to me lying on the bottom of that manhole, but what was actually only a few minutes, I saw a little light and finally understood from my helper that there was a horse on top of me.

What had actually happened was that our small push cart, well-loaded, with the end gate down, parked within a few feet of the open manhole. The alley we were working in was paved and on that particular day was covered with an icy sleet. A junk peddler with his horse and wagon started to pass the manhole and cut a little too close to it.

His wagon hit our cart and dumped it into the manhole on me. Then the horse fell in with his hind quarters, and both



Cable Splicer Has Narrow Escape When a Horse Falls Through the Open Manhole in Which He Is Working.

feet went down until the larger part of his body completely closed the manhole.

The peddler and my helper tried everything they knew to get the horse out but without success. They finally had to call the fire department. It was nearly a half-hour before the animal was clear so that I could get out; and I do not mind admitting that was the longest half-hour I ever spent in my life, lying there in the dark imagining that horse's hoofs were coming nearer all the time and expecting them at any moment to end forever my career as a cable splicer. I have been able to sympathize with trapped miners ever since.

After that experience I always had my helper tie the cart to a pole or fence and make sure that the rear end gate was closed and well-fastened I believe that I am one of a very few cable splicers who have the distinction of having a horse in the same manhole with him.

"I Wonder Why" of an Observing, Traveling Telephone Engineer.

By Ray Blain.

I wonder why some telephone construction men have been so reluctant about adopting bolt cutters in their daily work?

The cutting of messenger strand has ever been a most difficult task and it is even more bothersome with the new steel used at the present time. Linemen generally nick it with a file or a pair of pliers, and then break by bending it first one way and then the other with two pairs of connectors. With this method the nicked strands break fairly easy, but the old outlaw in the center is a different story—it causes no end of trouble and at times profanity. When a messenger is cut in this way the strands will be separated at the end so that it is impossible to make a neat smooth serve up.

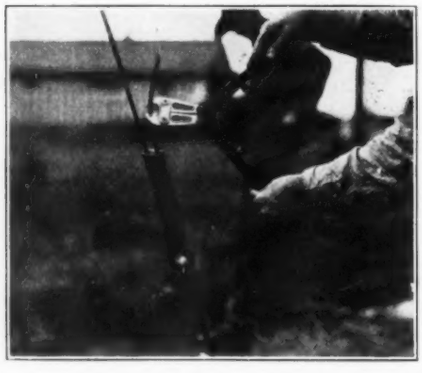
Perhaps the use of bolt cutters in telephone work is frowned upon by linemen due to their size and weight. This feature need not be an objection anymore for there are available bolt cutters which are small and light enough to carry in a lineman's belt and still strong enough to cut messenger strand. These cutters can be used with ease on a pole and any lineman will agree they are a big improvement over the old crude breaking method for messenger work.

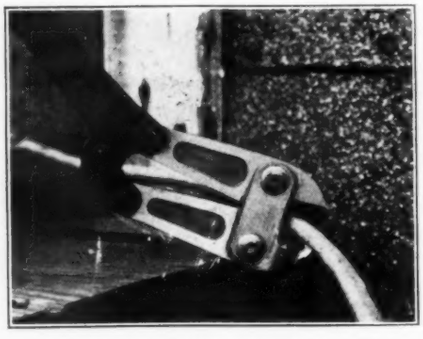
Telephone men will soon realize the advantage of good bolt cutters and I am of the opinion that it will not be long before a few bolt cutters of various sizes will be a common sight among the tools of all up-to-date telephone exchanges.

American Standards Association on Manhole Frame Standards.

A proposal for an American standard for manhole frames and covers containing recommendations for 13 types of frames and seven types of covers to replace the thousands of types now in use has just been published by the American Standards Association.

The demand for innumerable, different designs and sizes of openings for manholes by the various public utilities and municipal supply departments which make use of manholes for their underground pipes and





Bolt Cutter Will Cut Messenger or Guy Strand with Ease and is Conveniently Carried in Lineman's Belt.

lines, has caused many difficulties in manufacture and replacement of manhole frames and covers. The present concerted effort to standardize on a few sizes and styles is the result of of these difficulties.

Since 1924 a technical committee has been working on the subject under the procedure of the American Standards Association, going through a long process of elimination, selection, and re-design. The number of utilities concerned with manholes is indicated by a list of the organizations which have been working on the formulation of the standard through representatives on the committee.

L. B. Fish, representing the Bell telephone system, is chairman of the committee which prepared the proposed standard, and H. C. Dean, representing the National Electric Light Association, is secretary. The American Society of Civil Engineers and the ASA telephone group, which includes the United States Independent Telephone Association, have been acting as joint leaders in the technical work.

The committee is now circulating a questionnaire to all those concerned with the production and use of manhole frames and covers to determine whether producers and users find the recommendations satisfactory or whether they wish to make suggestions for changes. Copies have been sent by the United States Independent Telephone Association to its A, B and C member companies.

The proposed standard includes drawings showing designs and dimensions for the 13 types of manhole frames and the seven types of manhole covers which are recommended. It is believed that this limited number of frames and covers will meet the present requirements of utilities.

Copies of the draft are available from the American Standards Association, 29 West 39th street, New York, N. Y.

"Let's Put Safety First at the Steering Wheel."

By JAKE THE LINEMAN.

Howdy, buddies! I'm sure glad to see all of you fellows turnin' out fer practice each week, an' from the reports I've been receivin' "Ole Man Accident" is havin' a tough time tryin' ter break through our line fer a score. Keep up the good work! An', remember! Don't be "The Guy Who."

This week I'm goin' ter give you some rules to observe when yer out in yer truck, or even drivin' yer own car aroun'.

The motor vehicle is one of the most serious of accident hazards. Durin' 1930, 33,000 persons were killed by motor vehicles! Jist stop an' think about it: 33,000 people died because harmless pieces of machinery were placed in the hands of careless humans!

Little kids, jist findin' out what a good ole world this really is, were mowed down an' their laughing voices stilled forever. Suppose yer own boy or girl was to leave you fer school, happy an' well, an' be picked up a few minutes later—a bleeding, lifeless little body, probably struck down by some moron type of human who never even bothered to stop.

Not a pleasant thought, is it? But a scene such as I have jist described was reenacted more than once durin' the last year. Somethin' should be done to stop this needless waste of human lives.

You an' I can do our little bit, an' I'm gonna show you how. Everybody comfortable? O. K.! Let's go! An' remember, learn the safe way—now! It's too late after the accident has happened.

Drivers should never attempt to pass other vehicles at street crossings. Some fellers fergit to signal fer left turns an'—Bam! You're in an accident!

Right-of-way at street crossings should be given to the car on the right. An' even if yer got the right-of-way, proceed cautiously across street intersections fer some fellers don't believe in rules.

In all cases of doubt or uncertainty as to what the feller ahead is goin' ter do, slow down or stop. Better stop before somethin' happens than stop when it happens.

Vehicles should be under absolute control when passin' children at play. Childred at play don't think of the danger of the street, so try an' make the strects as safe as possible.

Everyone of us kinda' likes to bear down on the ole accelerator an' make the family chariot step, but let's always drive at a reasonable rate. Remember: It's always best to get there whole than be buried in a hole.

Children like to "hitch" rides on the back of trucks. If any get aboard the rear end of yer truck, stop at once! Don't bawl the kid out! Explain the danger to him so that there'll be no next time.

Always stop before crossin' railroad tracks an' make sure its O. K. to cross; fer, buddy, generally when yer mix with one of those engines, yer mixin' days are over.

Running boards are no place to ride. Many a feller has met a horrible death by falling off the runnin' board an' bein' crushed by the oncoming traffic.

Ears, eyes, brains, hands, and feet are yer equipment to use when drivin' a car. It takes the constant cooperation of them all to drive a car safely.

First aid supplies should always be carried in your truck so that if an accident does happen you'll be prepared fer it.

Unsafe practices, such as drivin' close behind another car, ridin' street car tracks, racin' fer the green light, and racin' with other cars, should be stopped at once.

Look out fer "Junior Officers" who are regulatin' traffic fer school children. Those boys are proud of their jobs, an' it's up ter you an' me to encourage them by obeyin' their signals.

Look aroun' carefully before you pull from the curb into the street. Remember a movin' line of traffic has the right-of-way.

Your brakes should be tested each mornin' before you get far away from the garage. If they don't hold—get them fixed at once.

That's enuf signals fer this time an' now as we've a few minutes left we'll have a little chat.

Did you know that us people in the United States are carried 'roun' by the ole earth at a rate of from 12½ to 14½ miles per minute? An' then some of us try to add 75 or 80 miles per hour onto that. It's no wonder there's so many humans who started to go a piece in 60 flat, picked up in pieces an' now rest in peace. Figger that one out and resolve to replace the lead in yer feet with feathers.

A lot of drivers try to mix their liquor with drivin' an' it causes a heap of trouble. If you'll jist remember the little formula below, the next time yer tempted, I'm sure you'll take the family chariot home—fust.

Alcohol + Gas = Embalming Fluid.

Well, I'll beat it now, fer I know yer all hungry after this long practice, but before I go I'd like fer you to remember that—

"If yer foot falls like lead on the accelerator,
Spaded earth may fall like a blanket over you!"

So long—see you next week—and in the meantime drop me a line.

New Year Greeter Fires Shotgun Charge Into Cable.

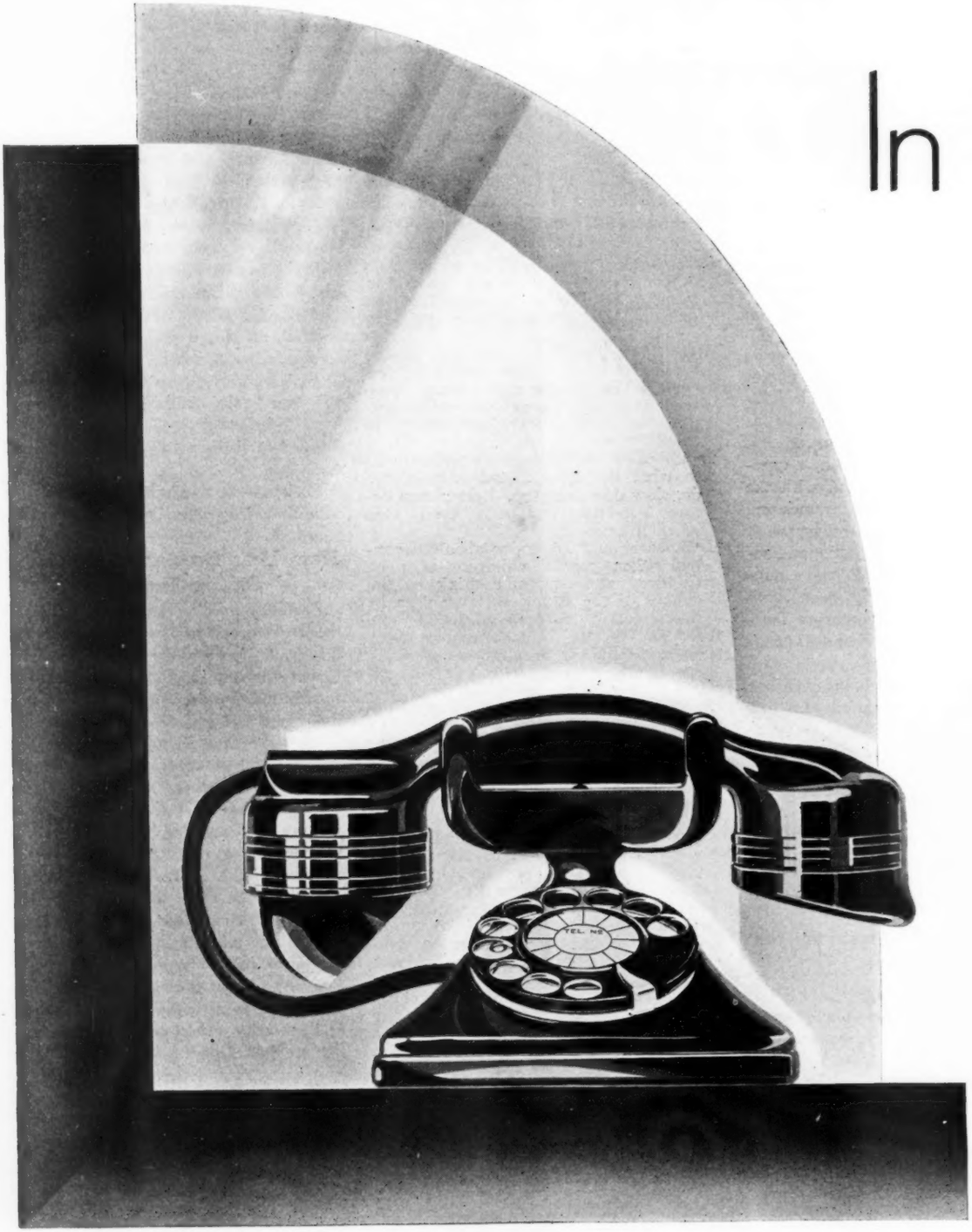
Promptly at 12 o'clock New Year's Eve the night operator in the exchange of the Denver & Ephrata Telephone & Telegraph Co. at Denver, Pa., noticed a whole flock of tiny lights come up on the switchboard. She heard the whistles blow and the guns crack—and when she answered the calls she expected a New Year's greeting. Instead, she found that all the lines in one direction had "gone bad."

After investigation early New Year's morning the troubleman found that someone had used a shotgun in celebrating the arrival of the New Year. A whole load of shot had struck the cable and punctured the sheath, allowing water to enter from the heavy rain of that night.

In a nearby yard two shotgun shells were found and investigation is being made to find out who caused this serious interruption to the telephone service throwing out 75 telephones and the trunk lines between Denver and Ephrata. It was necessary to call out the cable crew and they battled with the elements until 1 o'clock of New Year's day to repair the trouble temporarily. The damaged piece of cable was placed on display in front of the Denver exchange.

Prices in the Metal Markets.

New York, January 11: Copper—Steadier; electrolytic spot and future, 7¼@7⅜c. Tin—Steady; spot and nearby, $21.87; future, $22.25. Lead—Steady; spot New York, 3.75c; East St. Louis, 3.55c. Zinc—Steady; East St. Louis spot and future, 3.07c. Antimony—6.00c. Quicksilver—$66.00@68.00.



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ctruction and Design,

The Monophone Is Far in Advance

HERE e reason for the Monophone's leadership. Not o materials or methods of the past, Strowger neers g the Monophone, have made use of the adv rials available, and have utilized the latest most anufacturing methods in its fabrication.

he gr and light weight of the Monophone are butab of Bakelite, a material unknown a few years . Sub eat presses to high temperature and thou- ls of pressure, this material is capable of being lded graceful, flowing shapes which make the hopho d's most beautiful telephone. The deep, ous fi formed will not chip or crack, and lasts the ime ment. The high dielectric qualities of this erial a ally of great value.

he en ll which produced this instrument is further mplifi formance characteristics of the Monophone. se inc clarity of transmission, no sizzling or frying, ardles handset is held, easy, perfect balance and maint nse. Write for more information—TODAY. talog adly sent upon request.

Monophone base and handpiece as they come from the press, where Bakelite is subjected to high temperature and enormous pressure to produce the permanent, lustrous shapes which form the finished instrument. Automatic Electric Company was the orignator of the use of Bakelite in general telephone construction.

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A Dial System Pulse Measuring Device

Simple Method for Measuring Accurately Small Intervals of Time Up to One Second—Timing of Relays in Automatic Telephone Exchanges to Obtain Proper Action of Circuits Is Facilitated—Detailed Description of Apparatus and Tests

By A. E. Burns,

Engineer, The Pacific Telephone & Telegraph Co., San Francisco, Calif.

For the purposes of this discussion, the uses of relays in telephone service may be classified under two general heads: those in which proper *time-of-operation* is a vital requirement, and those in which time is of secondary importance.

Manual system relays, in general, come under the second classification, but in dial system operation proper timing is the most fundamental of requirements and necessitates careful coordination of adjustments throughout the entire circuit-chain.

So far as mere operation is concerned, relay adjustment has become a precise art in which rigid current-flow and mechanical requirements have taken the place of the old common sense and judgment methods.

Timing requirements, however, at least so far as field practice is concerned, are still either left largely to the judgment of the adjuster, or are covered indirectly by the specification of mechanical and electrical adjustments under which normal equipment will function satisfactorily. This method is adequate under ordinary conditions but problems sometimes arise in which the field man has to meet some unforeseen or non-standard condition and has no means of doing so other than by the good old method of cut-and-try.

The following description covers a device that was developed for the purpose of measuring small time intervals as accurately as need be and to make it practicable to measure definitely the timing of the various components of a relay system. It is particularly applicable to relay pulse measurements but can be applied to other measurements ranging from 0.001 second to 1.00 second. The device is admittedly somewhat "haywire" in design and is subject to minor variations that affect the accuracy, but it serves its purpose sufficiently well for all ordinary purposes and is simple in construction and easy to use.

Fig. 1. View of Pulse-Measuring Device.

In a previous article ("Some Motion-Time Tests of Telephone Relays," TELEPHONY, November 23, 1922), the writer described a flywheel device for making time measurements and showed operation-time curves for a few typical relay arrangements.

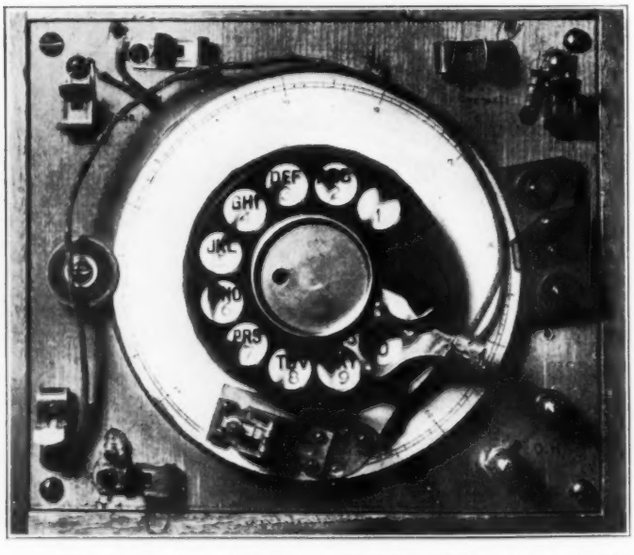
The present device is fundamentally similar in principle but utilizes a standard type of calling device as the rotor. Substantially uniform motion of rotation is produced under control of the governor that forms a part of these devices, and the regular dial contacts afford a convenient means of opening or closing the test circuit at definite intervals.

Operation time is measured in terms of the amount of rotation of the dial fingerwheel between the opening or closing of the dial contacts and the response of the relay equipment under test. The magnitude of this rotation is measured by means of a set of external contacts that can be set to any desired time lag with respect to the dial contacts proper.

Although commercial dials are not absolutely uniform in rate of rotation, they are sufficiently so for practical purposes, particularly as most of the equipment tested will be required to function under control of this same non-uniform type of dial. Some makes of dials are better in this respect than others but all should give reasonably accurate results in the middle range of a pulse train.

Check tests against an oscillograph indicate that the accuracy of a pulse measurement with this device is of the order of 0.001 second.

Fig. 1 shows the pulse measuring set as assembled for field use. This particular assembly has gone through several metamorphoses in process of development and some of the details can be improved. It works well, however, in its present form.



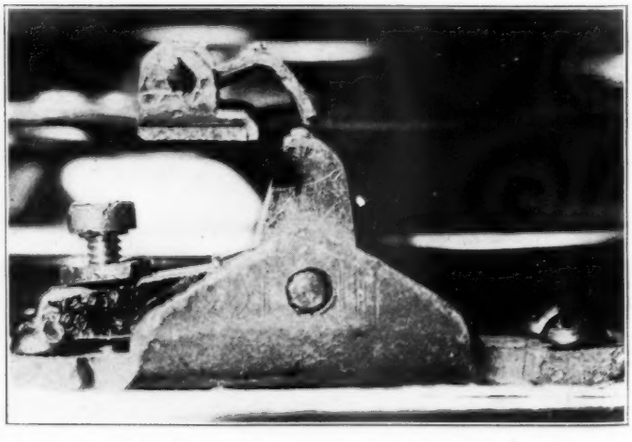


Fig. 2. Closeup of Calling and Meter Dials—Fig. 3. Dial Being Pulled. Electrical Contact Prevented by Bakelite Insert.

The calling device, Fig. 2, is a standard Western Electric Co. dial, having a normal speed of 10 pulses per second. This type of dial appears to have a slightly slower speed at the beginning and end of a series of pulses but this is not sufficiently marked to be serious. A longer driving spring could, no doubt, be extemporized if a more constant driving tension were necessary.

A brass extension finger on the finger-wheel forms a part of the measuring contactor and engages a make-and-break contact in the external or meter dial as the calling dial restores to normal.

The finger-wheel contactor carries a spring latch that rides over the stationary contact as the dial is pulled, Fig. 3, and engages it as the dial sweeps back in restoring, Figs. 4 and 5. False signals are prevented by a wedge of insulating material that prevents electrical contact between the members as the dial is pulled.

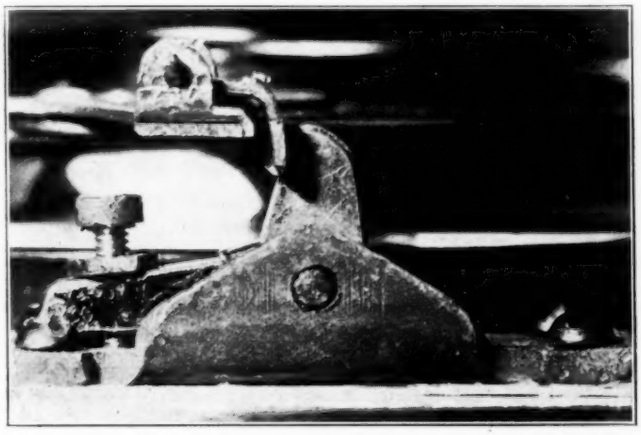
The external scale-carrying dial is constructed of vulcanized fibre and is adjustable to any desired position by means of the small vernier friction wheel. The meter contact is mounted on this dial and consequently can be rotated so that contact is made at any desired point of the rotation. As stated before, the position of this contact with respect to the position of the finger wheel, at the time the regular dial contacts open or close, affords the means of determining the time lag of the equipment under test.

The external dial carries a scale that is calibrated to correspond to the arc swept over by the finger wheel for each of the pulses from 1 to 10. Each pulse division covers an angle of 30 degrees. Each individual pulse division is divided into tenths and may be estimated to hundredths of a pulse or approximately 0 001 second. By rotating the fiber dial to the proper position, any pulse of the series may be singled out and measured.

A receiver is connected in series with the finger wheel and the meter contacts and, as a battery is included in the circuit, closure of the circuit is indicated by a "click." The rocker arm of the meter contact leaves its back stop as soon as any motion occurs, so the duration of the closed circuit is practically instantaneous, which makes it possible to determine the timing of the external circuit very accurately.

The condenser across the receiver terminals serves to intensify the "clicks" heard in the receiver, as without this the current in the receiver would build up to such a small value during the short duration of the circuit closure that the clicks would be low in intensity. The condenser, however, charges very rapidly and stores up energy that produces a comparatively loud volume of sound as the condenser then discharges through the receiver.

The fundamental principle of the whole scheme of measurement is that if the external circuit (relay contact, etc.) is closed when the instantaneous contact is made, a "click" will be heard; if open, no click is heard. By shifting the point of contact by means of the friction-wheel vernier adjustment, the instant at which the external circuit changes condition can be precisely determined.



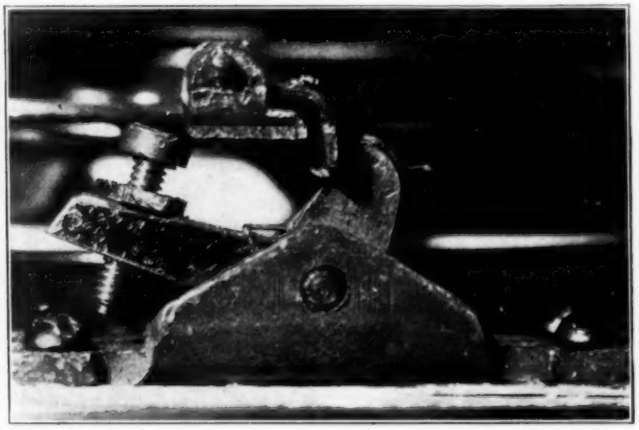


Fig. 4. Dial Restoring Instantaneous Contact as Moving Finger Touches Meter Contact—Fig. 5. Dial Restoring Circuit Opened as Meter Contact Follows Finger Wheel.

Calibration.

The meter is calibrated by connecting the pulse and meter leads together and proceeding as in a test of an external circuit. Each of the ten pulses can be measured if desired but in practice the performance of a piece of equipment under two or three pulses in the middle of the series will suffice.

Assuming that pulse No. 4 is to be calibrated, the meter dial is rotated until the pointer coincides with the scale reading 4.00. The dial is then pulled for the figure "0" and released. If the finger wheel arm touches the meter contact before the pulse springs break for the fourth pulse, a click will be heard in the receiver.

By rotating the meter dial, the exact point between the "click" and "no click" condition can be found, and the scale reading can be noted as the beginning of the fourth pulse. The meter dial is then rotated until the point where the pulse springs again close is found and noted, and this is repeated for each of the pulses to be measured. A typical series would be as follows:

Pulse	Break	Make	Pulse Ratio
4	4 02	4.63	61/39
5	5.01	5.63	62/38
6	6.02	6.63	61/39

Each pulse should consist of a 61 per cent open period and a 39 per cent closed period, and the dial should be adjusted, if necessary, until this pulse ratio is obtained; also the speed should be 10 pulses per second.

No attempt need be made to have the scale zero readings coincide with the actual zero points, as only the *difference* between successive readings is essential to the measurements.

Circuit-Time Tests.

The device is then connected to the circuit to be tested, the dial pulse leads being connected to the incoming side of the circuit and the meter leads to the outgoing side.

If possible, the outgoing side of the circuit should be cleared of "spark condensers" or other capacity whose charge or discharge would tend to confuse the click heard at the actual closing of the circuit by the relay pulse contacts.

Where this would affect circuit operation or is not practicable for other reasons, reasonably good results can still be obtained by reducing the test battery voltage to a minimum. The critical instant cannot be determined as definitely, however, as it can if the circuit has been cleared. Sometimes it will be found practicable to connect the meter leads directly to the contacts of the pulsing relay.

Readings for as many pulses as desired are then taken in a manner similar to that for calibration. When these readings are compared to the calibrated readings, it will be found that there is a perceptible time lag between the instant that the dial pulse springs open and close in transmitting a

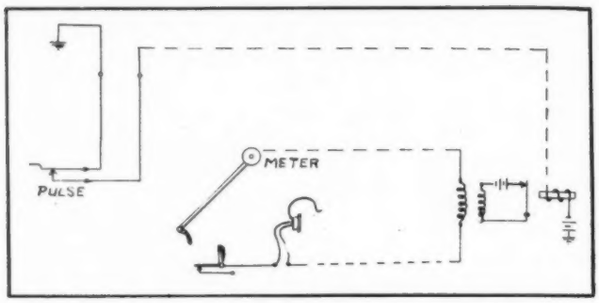


Fig. 6. Typical Arrangement for Measurement of Pulse-Repeating Dial Trunk Circuits.

pulse and the corresponding action of the pulse relay.

If this lag were the same for both "break" and "make," no harm would result, as the pulse ratio of the transmitted pulse would be identical with that of the calling device, although the pulse as a whole would exhibit a phase or time displacement. However, in practice, such circuits are usually connected to cable circuits of various resistances and capacities that radically affect the action of the relays and distort the pulses.

The effect of these items can readily be detected in the time measurements and corrective measures applied with definite knowledge both of the difficulty to be remedied and of the effect of any changes.

Increasing the spring tension of a relay, for instance, will be found to reduce the lag for the "break" and increase the lag of the "make." Increasing the normal air gap will usually increase the lag on "make" but will have no effect on the "break." Shunt resistance tends to make the relay sluggish at both ends of the pulse, but with the most marked effect on the release time.

Other relays, coils, condenser, etc., in series or shunt, all produce effects that must be considered in the circuit design.

In general, it will be found that for the usual types of telephone relays, the predominating factors in the timing are electrical rather than mechanical, i. e., the actual time of motion of the relay armature is relatively very short, and the lag in operation or release is largely due to the time constants of the circuit and the consequent time curves of current build-up and decay.

Fig. 6 shows the method of testing a typical "repeater" or dial trunk circuit, the particular arrangement being one tested by the writer several years ago because of failure to function after installation. In this particular circuit, the pulsing relay was of the Western Electric Co. "E" type, having core and armature formed of fairly heavy punchings.

Call failure resulted when this relay was given the regular catalog adjustment, and the reason is evident from the results as shown below. The standard W. E. Co. dial pulse ratio at the time of these tests was 66/34, the change to 61/39 having been made subsequently.

	Lag on "Break," Seconds	Lag on "Make," Seconds	Pulse Ratio
(a) Dial calibration		....	66/34
(b) Dial trunk, standard adjustment	0.005	0.023	84/16
(c) Dial trunk, corrected adjustment	0.010	0.016	72/28
(d) Dial trunk, "B" type relay.....	0.002	0.007	71/29

The circuits operated successfully under adjustments (c) and (d). It will be noted that the "B" type relay, which is of lighter construction than the "E" type, is appreciably faster in both operation and release. However, there is some tendency for the contacts to "bounce" on "make," which may tend to shorten the life of the relay contacts.

In a more recent series of tests to determine the effect of connecting two "repeaters" or dial long-line circuits in tandem, the following results were obtained:

	Lag on "Break," Seconds	Lag on "Make," Seconds	Pulse Ratio
(e) Dial calibration..		....	61/39
(f) Ordinary L.L.E. in tandem with repeater and 750 ohm cable loop..	0.038	0.019	42/58
(g) Condenser - discharge pulse-correcting L.L.E. in tandem with repeater and 750 ohm cable loop..	0.041	0.037	57/43
(h) Polar relay type pulse - correcting L.L.E. in tandem with repeater and 1,400 ohm loop..	0.029	0.022	54/46
(i) "Exchange repeater" (no loop)	0.017	0.016	60/40

The foregoing examples are given for purposes of illustration only, and no attempt should be made to draw any general conclusions from such fragmentary results. The extreme range of conditions in practice makes it difficult at best to determine the most favorable adjustment for any given case and a compromise between the extremes must usually be adopted.

The results do show, however, the surprisingly good pulse that is transmitted by most of the circuits tested, considering the magnitude of the time lags encountered. As just stated, it is the *net distortion* that is of importance, as simple phase distortion in itself is ordinarily of little importance.

One other use of the test set may be mentioned. The "off-normal" springs of a commercial dial normally operate just as the finger-wheel is pulled off normal in dialing a number. In this set, however, the tension of the middle spring was reversed so that it normally rested against the front contact. The mechanical construction of the dial is such that with this adjustment the "off-normal" contacts now operate just as the finger-wheel reaches the dial finger stop for the digit "0."

As the dial is released, therefore, the off-normal spring breaks one contact and

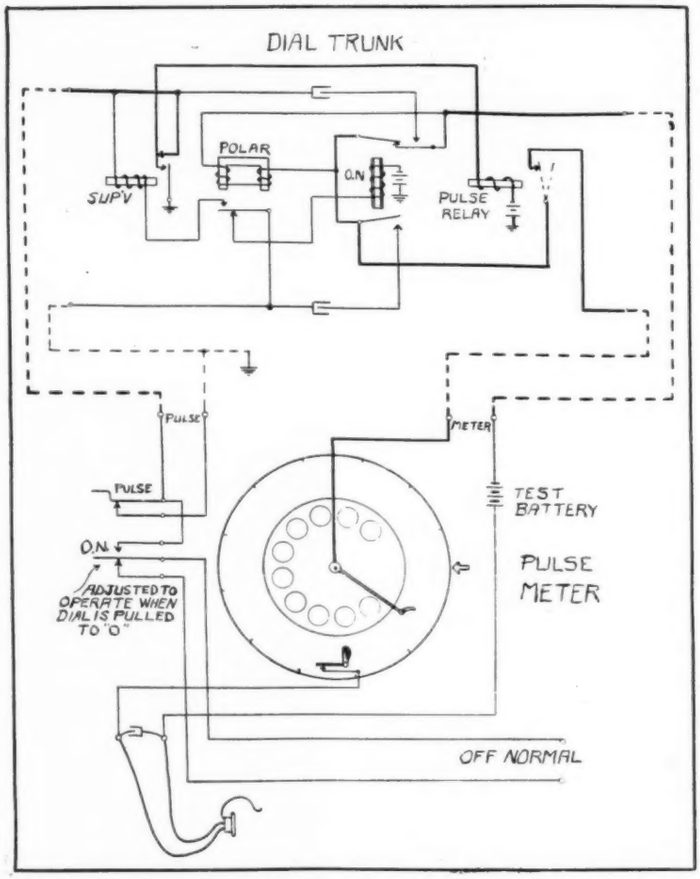


Fig. 7. Arrangement for Measurement of Mechanical Systems or Distant Circuits.

makes the other. These contacts are brought out to terminals and the point of make or break can be determined by calibration, as in the case of the pulse springs.

As the dial requires approximately one second to complete its revolution, time intervals up to one second can be measured by this means. This feature is particularly applicable to measurements of slow-operating or slow-releasing relays.

Aside from relay measurements, an interesting possibility that occurs to the writer would be to measure the velocity of transmission of mechanical systems such as the coiled spring system employed by S. P. Grace of the Bell Telephone Laboratories in his demonstration of delayed speech.

Microphonic contacts could be spaced along the system and the rate of travel determined in terms of the time-lag from point to point. For this particular type of measurement it would be necessary to make connections as in Fig. 7.

This same arrangement could also be used for measurement of distant circuits, as for instance, the time-lag of a telegraph relay in a distant town. The distant relay could close a local circuit and produce a click that could be transmitted to the tester over a telephone voice path.

The velocity of propagation of the audible signal might be appreciable over a long circuit, but as this velocity is usually known, it could be allowed for if necessary.

College Course in Radio Offered by University of Wisconsin.

There has been a long-felt want in the radio field for a school of recognized standing to give a complete, comprehensive, well-balanced course in radio communication, to be complete within itself and capable of being finished within a reasonable time. Realizing this need, the University of Wisconsin, extension division in Milwaukee, is giving such a course to fit students for advanced places in radio activities.

This is a new type of college training of a semi-professional nature with the object of training young men for positions existing in a field between the skilled craftsman and the trained professional engineer.

The course given in Milwaukee is not an experiment for it has grown out of auxiliary courses given during the past six years and is planned as a definite preparation for the actual problems met in practice. The work given is substantially of collegiate grade, requiring only a high school education or the equivalent for entrance. The training is very intensive, requiring the entire time of a student for two semesters.

The entire day is occupied from 8 a. m. until 4:30 p. m. with lectures, class work and laboratory experiments and special problems and assignments to be completed after class hours. This same course may be taken in evening classes over a period of two years, or by correspondence.

The principal course of a complete training in radio communication is strengthened by supplementary subjects which assure a thorough understanding of the various phases of the theory and practical applications of receiving and transmitting circuits. These correlated subjects include elementary electricity, high frequency currents, thermionic vacuum tubes, and laboratory work which is divided into three parts: (1) actual experiments, (2) design of apparatus and circuits, and (3) adequate drill in international Morse code.

Completion of all studies qualifies one for many of radio's allied branches.

AMBITION

By Miss Anne Barnes,

Traveling Chief Operator, Iowa Independent Telephone Association, Des Moines, Iowa

Most of us are ambitious; some more, some less. Then, why do not more of us realize our ambition?

Because we are not ambitious *enough*. We have no harvest to reap because we do not make our efforts continuous. We allow our enthusiasm to cool down.

How can we hope to generate life and develop growth in a mental atmosphere of chilled enthusiasm?

There is no better time than now to sow the seed of our ambition and thereafter put some regular effort toward its growth. "Ho, hum! Another time when conditions are more favorable," we make excuse to ourselves. We have no harvest because we are not ambitious—*enough* to keep steadily after the thing we hope to accomplish.

There are numerous things which tend to cool our enthusiasm. Some of them are unpardonably poor excuses. One of them occurs to us early every morning at getting up time. There was a time when we were so enthusiastic about the thing we hoped to accomplish, that we got up before our scheduled time for arising. But we were not ambitious—*enough* to keep it up.

Perhaps this does not matter much. What really does matter, though, is that we get up on time; but sometimes we do not, and so start the day wrong.

Outside matters often distract our thoughts from the things we are trying to accomplish. One of these, I think, is the irritating thought that we were late. It was not necessary, we know, so we feel a little bit guilty. We cannot dismiss the thought from our mind that our late-coming was discussed before we entered the room. "Others are often late, too," we argue with that pestering thought.

We may not have had time for breakfast, and we always feel unpleasant without it. We feel just negative enough to give a pretty stiff comeback to anyone who happens to mention our lateness. After that, all our enthusiasm runs out. "What's the use?"

Only yesterday we felt so sure of ourselves. We know we have native ability. Then why do we not make more progress? Because we are not ambitious—*enough* to put constant, careful effort into the cultivation of our proper patch of soil.

MORAL: Don't mind wind and weather. Keep going, up hill and down hill. Keep going, steep grades and rocky slopes. Keep going; it will be worth all that you put into it. Keep going!

Answers to Traffic Questions Presented on Page 21.

1. A messenger call is not always a person-to-person call but it always takes the person-to-person rate except in offices where a special rate, known as the messenger rate is used.

2. The six salient features of voice work are: Enunciation, rising inflection, stile strip, tone of voice, resonance and quiet.

3. In a case of this kind, the operator should ring the number without delay.

4. Passing a call to the distant office before asking for the calling number, advances the customer's call with greater speed. This is known as "Overlap Recording."

5. That depends upon the nature and seriousness of the complaint. In larger offices, these calls are handled by the supervisor. As a rule, operators are not in a position to handle these calls satisfactorily due to other signals waiting to be answered. Then, too, supervisors and chief operators usually have had more experience and therefore are better qualified to handle service complaints.

Here and There in Telephone Work

Movie Casting Requires Specially-Equipped Telephone Switchboard.

"Send me three men with wooden legs; 10 men with beards, Bavarian type; one head waiter, baldheaded, who sings both French and English; and 14 tough-looking gangsters. Have them report at building No. 9 at 9 a. m.!"

How would you like to have to fill this order overnight? There is a place in Hollywood that can do it easily. Its business is to fill hundreds of such orders every week. Many of them involve items more strange than the ones mentioned. It is called the "Central Casting Bureau" and is operated by the Association of Motion Picture Producers. Its job is to supply the studios with extras of all types in varying quantities.

The job is done by telephone through especially-designed telephone equipment which is unique in its particular field. There are over 17,500 motion picture extras registered at the Central Casting Bureau and many thousands of them telephone the bureau daily in an attempt to get jobs.

To handle these calls and those of the producers, which come in waves and rushes, the telephone company found it necessary to design a special switchboard which handles calls at a rate as high as 1,000 per hour. There are 40 trunk lines connecting the switchboard and the Hollywood central office of the Southern California Telephone Co.

Specially-Equipped Switchboard Used in Central Casting Bureau, Hollywood, Calif., to Supply Motion Picture Studios with Extras.

The calls come in like streaks of lightning across the switchboard and are answered with equal rapidity by the three operators on duty. In the same room as the operators are the men in charge of employing the extras. They sit facing the three switchboard operators and when a call is received the operator repeats the name of the person calling to the casting group. These men carry in their minds thousands of faces and names. If the party calling is of a type desired, the call is assigned to the casting director who completes the transaction. If there is no work to fit the type, the operator so informs the extra who is calling.

Heads of the casting bureau receive orders from the producing companies, of which 95 per cent are members of the Central Casting Corporation. Upon receipt of such requests, the casting men go to their index files, where extras are all classified as to type, and pick out those who would best fill the order. The extras are then called by telephone. If the extra is not at home or cannot call within a short time, another is chosen as the producing company cannot afford to wait.

The need for the speedy private branch exchange switchboard is best explained by the extra problem itself. Scores of persons arrive in Hollywood with their eyes and ambitions fastened upon the movie industry. They do not realize that there are approximately 17,500 registrations in the Central Casting Bureau and that there is actually a need for only about 840 extras per day. The bureau receives from 75 to 100 new applications daily. The average wage paid to an extra was $9.13 a day. Only one woman in the extra field averaged five days of work a week in 1929. So-called movie training schools, and photographers who induce movie aspirants to have expensive photographs taken, also add to the problem.

Formerly large groups of extras would wander from one studio to another in search of work, often meeting with disappointment, and sometimes ending their quests in tragedy. The Central Casting Bureau has been in existence five years and has proved its value not only to the producers but to the many thousands registered and knocking at the door of the movies in search of fame and fortune.

The telephone system of the bureau has played an important part in relieving many of the difficulties involved in the employment of actors and actresses in Hollywood.

P. B. X. Current Supply; Utilizing Central Office Power (Cont'd.).

By John A. Bracken.

In transmitting power by means of direct current from the central office storage battery for the purpose of directly operating private branch exchange equipment, four outstanding factors must be considered relative to the size of the conductors carrying the electric current:

1. The conductors (usually copper wire) must have sufficient capacity to carry the electric current without overheating.

2. The voltage drop to the P. B. X. switchboard when connections are established must be kept within reasonable limits. This is particularly important.

3. The conducting wires must be of sufficient mechanical strength, especially when part of the power supply circuit is strung on poles.

4. The economics of the power supply circuit must be considered. Unnecessarily increasing the size of conductors may mean less energy loss, in transmission (as for instance, using three cable pairs where but two are required) to the P. B. X., but higher investment cost in copper wire.

Conductors of such size should be selected to convey the power as to make the cost of energy loss plus the interest on the investment, a minimum.

The weight of the copper wire required for the purpose of transmitting the operating current from the central office to a private branch exchange varies inversely as the square of the E. M. F. when the power transmitted, the distance and the losses are fixed.

Since the size of copper wire varies inversely as the resistance, the weight varies inversely as the square of the voltage. Suppose the weight of copper wire required to transmit a certain amount of electrical power a given distance was computed at a pressure of 4.8 volts and again at 48 volts; it would be found that for the same loss the former case would require 100 times as much copper as the latter. The importance of working at the

highest possible voltage will be apparent.

If the central office battery E. M. F. is doubled, say from 24 to 48 volts, the weight of the conducting copper is quartered, other conditions being the same. That is, a conductor, having just one-fourth the weight of a conductor carrying current at an E. M. F. of 24 volts, would transmit the same amount of power the same distance at an E. M. F. of 48 volts with the same loss.

The load on a P. B. X. current supply circuit may be concentrated at one switchboard, as is generally the case; or it may be distributed along the supply circuit, as when the private branch exchanges are located at various points along the circuit the conductors may be of uniform cross section throughout their entire length.

This occurs when the supply circuit is short and the voltage drop is small. When the circuit is of considerable length, the minimum amount of copper for a given voltage drop is obtained when a conductor or a group of conductors of constant cross section is run for a part of the distance followed by others of lesser cross section, and so on, as shown in Fig. 1.

A good rule to remember is that the current density in each section should be the same. For example, the first current supply section of the circuit may consist of a 1288 circular mil conductor (equivalent of a No. 19 B & S gauge copper wire) carrying 3 amperes. Assume that the second, a lesser section, carries 1.5 amperes; it should be equal to 1.5 divided by 3 times 1288 which equals 644 circular mils (equivalent to a No. 22 B & S gauge copper wire) for this section.

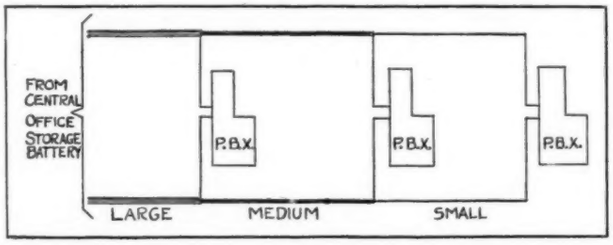


Fig. 1. Illustration of Varying Copper Wire Cross Section from the Central Office to Private Branch Exchanges.

Current density may be taken as the intensity per unit of cross sectional area of a conductor; that is, the electric current value dependent on, or defined by, the quantity of electricity that passes per unit area of cross section in any part of a circuit in a given time.

It is conveniently expressed in amperes per square inch. Thus, if the electric current is distributed uniformly through the cross section of a conductor, then, $U=I/A$, $I=AU$, and $A=U/I$. Wherein U equals current density, in amperes per square inch; I equals the current in amperes; and A equals the cross-sectional area, in square inches, of the conductor under consideration.

Example: If there is a direct current of 250 amperes flowing in a bus bar having a cross-sectional area of 2 square inches and connected to a central office storage battery supplying operating current to private branch exchanges, the current density in this bar would be: $U=I/A$ or $250/2=125$ amperes. Therefore, $I=AU$ or $2\times 125=250$, and $A=I/U$ or $250/125=2$.

A current up to 1000 amperes per square inch will not sensibly warm a conductor of 95 per cent conductivity and is, therefore, considered quite safe to use without overheating the conductor.

Bus bars are heavy bars of conducting metal, usually copper and sometimes aluminum, connected directly to the positive and negative poles of a central office storage battery and, therefore, receiving the entire current produced by the battery for the purpose of distribution.

Telephone Company Decorates Winning Christmas Window.

Employes of the Foster-Bell Telephone Co., Union Springs, Ala., proved their decorative ability the past Christmas season. The window display of the telephone company was declared the winner in the Christmas decoration contest of the Civic Welfare and Garden Club of Union Springs. There were two divisions in the contest—one for indoor and the other for outdoor decorations.

The window display of the Foster-Bell Telephone Co. was most attractive. Strings of colored lights outlined the exchange, which is an upstairs one with four windows. Wreaths were in three windows, while in the specially decorated one was a beautifully lighted tree, a large star being placed over this.

At the foot of the tree was a telephone, with the message, "Merry Christmas," in red illuminated letters. The display was the work of J. M. Dean, superintendent, assisted by the office force.

Free City of Danzig Keeps Telephone System Abreast of Times.

On December 31, 1930, reports United States Assistant Trade Commissioner Gilbert Redfern, Warsaw, Poland, there were 11,520 principal telephone connections and 8,361 branch connections in the Free City of Danzig, making a total of 19,881. The charge for local calls is 15 pfennig (approximately $0.03), with a minimum monthly rate of 12 gulden, plus 4 gulden for rent of the apparatus, or 16 gulden ($3.12).

In the municipalities of Danzig and Zoppot automatic equipment is in use, while in the rural districts, which have 140,000 of the Free City's population of 407,000, common battery manual equipment is employed.

Telephone service in the Free City is furnished exclusively by the Post and Telegraph Administration, a governmental establishment. Gross receipts from telephone operations in 1930 amounted to 6,049,365 gulden (approximately $1,200,000), but the administration states that expenditures—and hence net operating results—can not be given, for the reason that postal, telegraph, and telephone services are all united in one department.

The closed accounts of the administration for the fiscal year ended March 31, 1931, show receipts of 13,282,507 gulden and expenditures of 12,555,112 gulden.

CAN'T KEEP OUT OF IT

By "Buck."

A feller named Hennery Jones had a job on the ole "Telephones"; had it year after year until, it would appear, the bizness got into his bones!

One day Henry thought he'd gone stale an' didn't receive enough kale, an', though he was a "whiz" at the telephone biz, he quit. That's not all of the tale:

He tried out his hand at a store, but soon that became quite a bore, so he tried his endurance at sellin' insurance, but found that a hard-pullin' chore.

So he quite that job, too, this good brother, an' went out an' got him another, but each job he would get made him worry an' fret an' each one seemed rotten as 'tother.

So finally Henry came back to the bizness fer which he'd a knack. Now he says that he is in the telephone biz 'til he dies or they give him the sack.

He is happy now, he has confessed. Now the moral is no idle jest. That, in bizness as well as when courtin' a belle, "The first love is often the best."

What the Commissions Are Doing

Up-to-the-Minute News Regarding the Activities of State and Interstate Commissions, Courts and City Councils in Matters Concerning Telephone Companies—Summary of Commission Orders and Schedule of Telephone Hearings

New York Commission Affirms Order in "Wired Music."

The New York Public Service Commission on December 22 affirmed its order of August 25, 1931, in which it directed the New York Telephone Co. to furnish a company known as "Wired Music" with offices at 351 West 42nd street, New York City, with wires for the transmission and distribution of music electrically to its customers.

The commission affirmed its previous order after a rehearing had been held before Commissioner George R. VanNamee on November 19 in response to a request of the New York Telephone Co.

Briefs were filed by both the telephone company and "Wired Music." It was stated by the telephone company in its brief that its application for a rehearing was based upon the feeling that the commission "did not fully understand its position and rights in the matter." The existence of new evidence was alleged, and at the rehearing, the evidence presented by the telephone company witness amplified the evidence presented at the original hearing held on July 31, 1931.

"A consideration of the evidence and careful study of the brief presented by the company," states the commission's opinion written by Commissioner Van Namee, "leads to the conclusion that the original order of the commission should be sustained.

"The company admits that it has what it calls 'surplus facilities'—that is, facilities which are not in immediate need for what is generally known as telephonic service, but which at some time may be required for such service—that the company has made a practice of leasing these surplus facilities for various uses in which 'leased wires' for radio companies, stock-ticker companies, burglar alarm companies are included; that to keep the changes made on these particular classes of business, schedules have been filed with the commission; that such business has become, by common practice, a recognized part of the company's business.

The evidence tended to show that there is nothing in the nature of the service desired by 'Wired Music' which differs in any essential particular from that furnished radio companies to transmit radio programs over private or leased wires. It is true there are some mechanical and operating conditions which distinguish radio and 'Wired Music' service. If, in actual operation, interference is caused on the talking circuits of any cable, as is feared by the company, the use of wires by 'Wired Music' can be confined within limits which will not interfere with the regular telephonic service.

The chief objection by the company against 'Wired Music' appears to be that if the project is successful, 'Wired Music' may require all of the company's surplus facilities in various districts throughout the city and require the company to make a large capital investment, which, if the business of 'Wired Music' proved unsuccessful, would remain upon its hands without return and thus become a burden upon the profitable business of the company.

These questions have been dealt with at length in the opinion to the commission rendered by me on August 25, 1931, and upon which the former order was based.

If the testimony showed all of the company's facilities not immediately needed in the transmission of what is generally known as telephonic communication, retained by it to be used as required or needed in the future for such telephonic communication and that the company would not lease such facilities for various purposes, a question might arise as to whether the commission has the power to order it to serve 'Wired Music' in the manner desired; but the company itself, by leasing such facilities and filing with the commission schedules covering this class of service, has recognized such practices as a part of its regular business; and, having offered these facilities, it cannot discriminate between what sections of the public make use of them.

The question of the condition which may result if 'Wired Music' is a success and demands more service than the present plant and service of the company are able to give, can only arise when such situation develops, and at that time can be regulated. Certainly the commission would not require of the company the investment of a large amount of capital without proper safeguards as to deposits and guarantee as to continuance of business from the prospective customers.

The position taken by the telephone company that it does not desire to take the business of 'Wired Music' because it might be compelled to take more business than it could handle with its present facilities, is one which I have never known to have been raised by any public utility.

The other questions raised by the brief of the company have been either answered in the former memorandum, or are deemed not of sufficient importance for further discussion at this time.

The former order should be affirmed."

Chairman Maltbie and Commissioners Brewster and Burritt concurred in the opinion. Commissioner Lunn was not present.

Wisconsin Authorizes 2-Cent Service Charge on Hotel Calls.

The Wisconsin Public Service Commission last week issued an order providing that all hotels in cities of the first class which cater to transients, maintaining a telephone switchboard with 24-hour service and a station in the room of each guest, may make a service charge of only 2 cents on each outgoing toll call instead of 10 cents as proposed by certain Milwaukee hotels and the Wisconsin Telephone Co.

"We are definitely committed," the commission's order states, "to the policy that outside telephone service to and from a hotel is public utility service, the charges for which must be established as for any other public service with due regard given to the cost of furnishing the service."

The case originated in an application by certain hotels in Milwaukee for an adjudication by the commission of the rates of the Wisconsin Telephone Co. for hotel service and determination of a just division of such charges between the hotels and the telephone company.

Although the hotels and the telephone company subsequently reached and filed an agreement covering the service, the commission proceeded on its own motion to investigate the matter.

The agreement provided that the rate of the telephone company for local calls should be 5 cents, but that the hotels might charge 10 cents per call on other than local calls and post notices to that effect in their rooms. The company was to receive 4 cents per call in either case, in addition to certain fixed charges based upon the number of telephones, etc.

After reciting these facts and discussing certain exhibits submitted at the hearing, the order of the commission states:

"We will, therefore, first establish from the record the reasonable cost to the hotel of furnishing telephone service. This cost must then be allocated on a reasonable basis between outgoing and incoming guest calls on the one hand and management calls and calls entirely within the hotel on the other.

It is then reasonable for the purposes of this case, and without prejudicing for the future the possibility of assessing incoming calls at their source, to demand of the guests that they pay in telephone charges the cost of the incoming and outgoing guest

calls. The other classes of calls are distinctly costs of furnishing general hotel service and must be charged accordingly.

From a strictly theoretical standpoint incoming calls should carry their share of costs and be charged for separately, since otherwise a guest making a large number of out-calls and receiving no in-calls would pay for a service he did not receive. For practical reasons, however, we believe that for the purposes of this case substantial justice will be served by charging against outgoing guest calls the cost of both incoming and outgoing guest service."

The order then proceeds to analyze the average monthly cost of the hotel telephone service, considering the items of rental for facilities, salaries and wages, employes' meals, stationery, allowances for disputed bills, etc., value of space, management cost, advertising, rent, light and power, and interest and depreciation. An analysis of the number of incoming and outgoing calls also was made.

It was found, according to the order, that the cost of incoming and outgoing calls, aside from management and interior-communication services, which the commission says "are a part of the cost of furnishing general hotel service and can not be recouped by charges to guests for utility services," are substantially met by the present local-call charge of 5 cents, which is divided half and half between the hotel and telephone company.

The commission states that a general investigation of the Milwaukee exchange is in progress and may result in a change in the charges for hotel and other services, and no change will now be made in the revenue to be derived by the telephone company.

To cover the losses found to exist as a result of the deficiency in revenue to the hotels, the latter are authorized to make a charge of 2 cents on each outgoing toll call in addition to the regular charge of the telephone company.

Rural Rate Revised Upon Agreement with Commission.

The Minnesota Railroad & Warehouse Commission, on December 31, approved reduced rates for rural subscribers of Lakeville, Dakota county, exchange of the Central West Public Service Co.

Subscribers requested a reduction in the Lakeville rural rate, primarily upon the ground that the rate is higher than in neighboring communities for similar telephone service. They filed a petition containing 112 signatures with the commission, stating that, in their opinion, because of the present depressed business conditions, particularly in the farming communities, the present telephone rates in the Lakeville exchange area are not warranted.

The Central West Public Service Co. represented by President Frank Milhollan, Omaha, Neb., appeared at the hearing and declared that the company, because of the general business depression, was willing to reduce the rural rate of $2.25 per month gross to $1.75, in this exchange area, if the commission would so order.

The commission believes that, under the circumstances as stated, this reduction in the rural rate in the Lakeville exchange area will reasonably satisfy the request of the petitioners, and issued an order to that effect.

Discuss Farm Rate Reduction with Open-Minded Committee.

A committee of patrons, largely rural, of the Nebraska Continental Telephone Co., visited the Nebraska State Railway Commission January 4 to discuss the question of a reduction in farm rates that members of the committee believed should be granted because of the existing financial stringency among farmers. They represented largely exchanges in Platte county, a delegation from Columbus being headed by Senator Clark.

The spokesmen for the farmers were moderate in their demands, and when officers of the company and the commission showed from their books that the company was earning less than 6 per cent, that maintenance of its credit depended upon the company's continuance of dividend paying, and that as the company was not permitted to increase dividends in prosperous times it would be unfair to ask them to forego all returns at the present time, the delegation made no further dissent and filed no protest.

Injunction Restrains Issuance of Directory; Name Omitted.

A temporary injunction restraining the Ohio Bell Telephone Co. from issuing a new directory in Dayton, Ohio, from which the name and telephone number of Dr. Frederick N. Hayward is omitted, was granted January 9 by Judge Charles Lemmon in the Lucas County Court of Common Pleas.

Dr. Hayward averred that not only was his name and number omitted but that the number assigned to his home is listed to a man in another profession.

The physician asserted that his patients will be unable to get in touch with him by telephone and will believe that he has no telephone if the directory is distributed without his listing. The Ohio Bell had planned to distribute the new directory January 18.

Summary of Commission Rulings and Schedule of Hearings.

INTERSTATE COMMERCE COMMISSION.

December 30: Proposed acquisition by the Northwestern Bell Telephone Co. of control of the Tri-State Telephone & Telegraph Co., St. Paul, Minn., by purchase of capital stock, held not shown to be in the public interest. Application in Finance Docket No. 8923 denied.

December 30: Application Northwestern Bell Telephone Co. in Finance Docket No. 8924 for a certificate that the acquisition by it of certain toll properties of the Dakota Central Telephone Co., Aberdeen, S. D., will be of advantage to the persons to whom service is to be rendered and in the public interest, dismissed.

ILLINOIS.

January 13: Hearing in Chicago before Chairman Hadley on complaint of the commission vs. the Middle States Telephone Co. to show cause why there should not be a reduction in rate for service in the cities of Pekin, Park Ridge, DesPlaines and vicinities.

MINNESOTA.

January 21: Hearing in Merrifield on application of the Township of Center, Crow Wing county, for authority to establish a township telephone system.

MISSOURI.

January 7: In regard to complaint of the public service commission vs. the Youngblood Telephone Co. and the Farmers Cooperative Telephone Association, it is ordered that the Youngblood company and the Farmers association, both of Ozark, shall within 25 days after receipt of this report and order, notify the commission whether it is then charging its subscribers the rates on file or whether it is continuing to charge rates not on file with the commission; also that the Farmers Cooperative Telephone Association shall within six months, thoroughly rehabilitate its telephone plant so that adequate service may be rendered.

January 13: Hearing in Jefferson City on application of the Scotia Telephone Co. to file a new schedule of rates for telephone service at Union.

January 14: Hearing in Jefferson City on application of E. O. Turner to sell and the Southeast Missouri Telephone Co. to buy certain telephone property located in Madison county.

NEBRASKA.

December 28: In the matter of the application of the Kinkaid Mutual Telephone Co. for authority to charge $1.25 a month for telephone service without distinction as to class; it appearing that the company is organized purely as a mutual, serving only its owners and not offering service for sale, action is dismissed on the ground of want of jurisdiction, the supreme court having held the commission has no control over rates or service of purely mutual companies.

December 29: Application filed by the Pawnee Telephone Co. by G. E. Becker, asking authority of the commission to execute a ten-year coupon note for $10,000, to bear 7 per cent; the board of directors having voted, in order to save interest charges, to employ the proceeds of the note for the purpose of reducing all outstanding note and floating indebtedness, now bearing 8 per cent.

December 30: Application filed by the Eagle Telephone Co. for authority to reduce telephone rates 25 cents per month by making the present standard rate for service the gross rate to be charged, the object being to avoid penalizing farmers who cannot afford to pay cash for service.

January 8: Application filed by Thomas P. Hamilton & Sons, Thedford, asking authority to disconnect lines owned by it, the Hamilton Lines, from Thedford ex-

(*Please turn to page* 40.)

Telephone Exchange In Historic Building

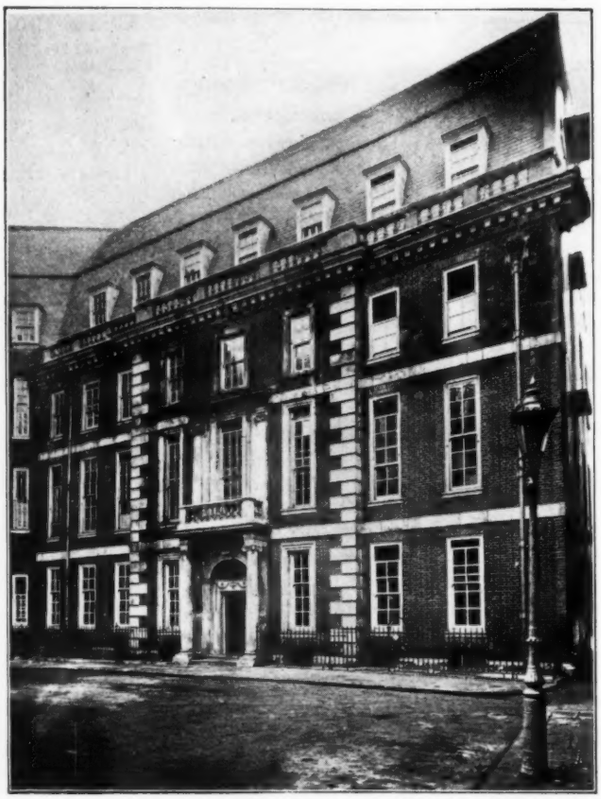
Whitehall Exchange in London, England, is Located in Building Designated as an "Historical Monument"—Building Nearly 250 Years Old Now Holds Telephone Equipment Serving Most Important Government Offices

By H. H. Eady,
Siemens Brothers & Co., Ltd., London, England

On Saturday, October 3, at 1:30 p. m., the new Whitehall automatic exchange was successfully brought into public service, it being the tenth and largest of the London telephone exchanges constructed and installed by Siemens Brothers Co., Ltd., Woolwich, England.

This exchange, while being similar to the previous exchanges which the company has installed in the London area, has several special features of interest. From the administration's point of view, its chief interest lies in the fact that it is situated in the heart of "Government land."

In addition to its less pretentious subscribers, it serves Buckingham Palace, the Houses of Parliament, and some 27 government departments, including the Admiralty, Foreign Office, Air Ministry, Home Office, Ministry of Transport, Treasury, War Office, etc. It is, however, on the historical side that general interest in the new telephone exchange building is likely to be strongest.



"Harrington House," the Historic Building Housing the Whitehall Telephone Exchange in London, England.

Whitehall exchange is unique in being the first London automatic exchange in which part of a building scheduled as an "Historical Monument" has been incorporated in the exchange structure. The original building was known as Harrington House, situated in Craig's Court, Whitehall, and the west front of the old house was retained as the western boundary of the new building.

Written records regarding Harrington House appear to be very scanty. It seems from contemporary records, however, to have been built in 1690, which was about the time Sir Christopher Wren with another surveyor confirmed the boundaries of a strip and square of land leading from the then High street. This land was leased by the Crown for 99 years to a Joseph Cragg, or Craig, a vestryman of St. Martins-in-the-Fields.

No architect appears to have been employed on the old building, but traces of Wren's influence are apparent in some of the work. Experts express the opinion that it was probably built under the direction of a master mason and a master carpenter who had previously been engaged on buildings under Wren's supervision.

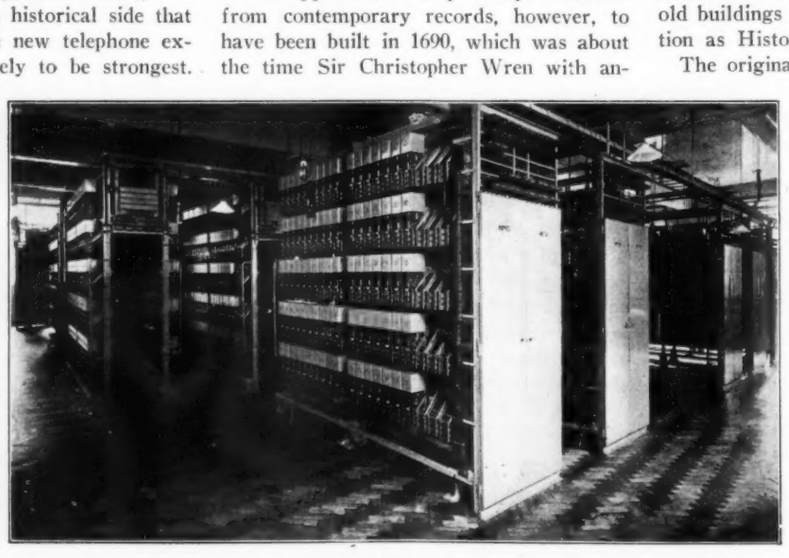
The house was poorly built, the setting out of the piers and windows being irregular, and the part of the wall retained in the front was actually ten inches out of the vertical, due no doubt to the want of an architect's supervision.

Harrington House was purchased by the Stanhope family prior to 1780 and was in that family's possession and occupation until 1917, when it was sold to Cox's, the army bankers. In 1925 the property and that on the north side of Craig's Court was acquired for the Postmaster General by the Office-of-Works, as a site of a telephone exchange.

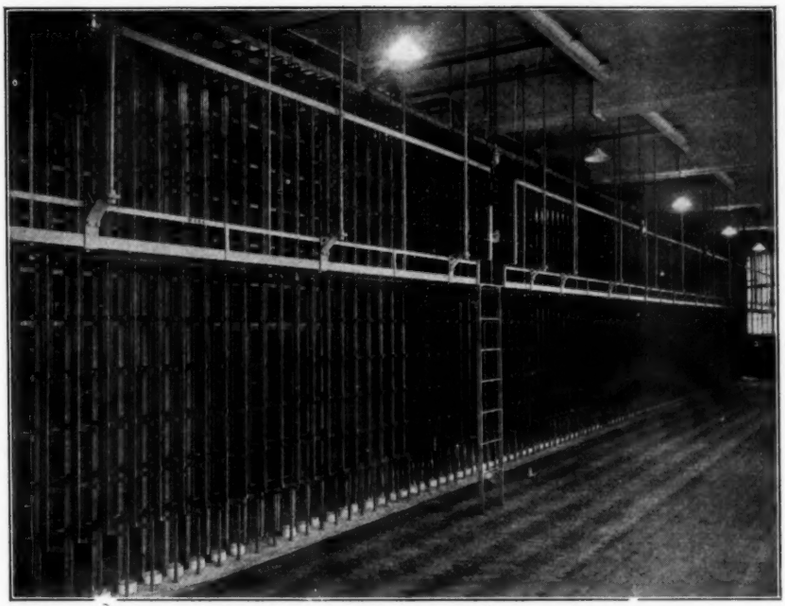
After some agitation by antiquarian and other societies, and correspondence with the Office-of-Works, it was decided to sacrifice some floor space in the exchange for the sake of retaining the front elevation, hall, staircase and first landing of the old building which the Royal Commission on old buildings has deemed worthy of retention as Historical Monuments.

The original mansard roof could not be retained, but the roof ballustrade, though new, is on the same lines as the old, and generally speaking the front elevation with the new mansard roof as it appears from Craig's Court, gives a striking impression of the beauty and dignity of the original building. Unfortunately none of the original stack pipes or their heads was left.

Two of the stack pipe heads now in use belong to the period when Harrington House was built, but the two main heads are modern reproductions of the period of George



Numerical Selector Boards in the Whitehall Exchange. The Selector Switches on These Boards Select the Numerical Position of the Required Subscriber's Number. The Code Position Is Chosen by Code Selectors, Which Appear Similar.



Main Distributing Frame in the Whitehall Exchange. The Underground Cables Are Terminated at the Rear and Cross-Connected to the Lightning Protectors Fitted on the Front of This Frame. The Protectors Are in Order of Subscribers' Numbers and Connect by Switchboard Cable to the Automatic Equipment.

III. One has a George III monogram, and the other the present King's.

The staircase panelling, and bannister rails are mixtures of old work and restoration, the whole being toned old oak to conceal the latter. The door light, door lamp and landing chandelier are modern reproductions, based on the Stuart models; the marble flooring in the hall is also new, none of the old blocks being available.

The new wing of the building has been designed not to appear of the same date as the old house, but to bear a resemblance to it.

During the course of the installation, visitors from the works who had to make calls at the exchange were shown the preserved portion of Harrington House and were always informed that it was Nell Gwyn's house. No doubt their minds conjured up a mental picture of gay King Charles II being received by his lady friend in the fine old front hall. As the house was built in 1690, and Nell Gwyn, who was born in 1650, died in 1687, two years later than Charles II, there can be no doubt neither the King nor the lady had any association with the remnants now remaining.

A few particulars of the Whitehall exchange equipment may be of interest.

The basement has been reserved for the batteries of which two each of 9,693 ampere-hours capacity have been installed, space being reserved for the batteries for a second 10,000-line exchange which will later be housed in the same building.

On the ground floor will be found the main distributing frame which has 135 verticals and is fitted with a platform all around to enable the upper half to be reached, as shown in one of the illustrations. Space is also reserved for another main distributing frame for the second unit. This frame is now in course of manufacture in the works in advance of the automatic equipment. A test desk of eight positions, which will ultimately be extended to 14 positions, has been provided.

On the same floor are the power board and two machines each of 85 kilowatts for charging the batteries, and space is reserved for a further two machines to cater for the second exchange. The first floor is entirely reserved for the automatic equipment for this exchange. The numerical selectors and the large P. B. X. groups are accommodated on the second floor of the building.

The third floor is occupied by line units, first code selectors, directors, meters, etc., while on the fourth floor will be found the manual switchboards which consist of 33 "A" positions and 18 "B" positions.

The exchange is equipped for 9,200 multiple numbers and there are 1,559 trunk lines to and from other exchanges. The total number of single-motion switches of the preselector type is 12,138, while there are 7,388 two-motion switches, or selectors.

Wisconsin Bell Plans $7,000,000 Construction Expenditure.

Plans of the Wisconsin Telephone Co. for the expenditure of $7,000,000 for extension, improvements and replacements in 1932 were announced recently by President William R. McGovern.

Among the projects will be a new exchange building in Eau Claire, major installations of central office equipment at Green Bay, Madison, Manitowoc and Oshkosh, and extension of long distance lines throughout the state of Wisconsin.

Vitrified Clay Conduit

For Electrical Subways and Other High Tension Lines

Telephone and Other Low Tension Service

Excellent stocks all sizes available for quick shipment.

Our Specialty—QUALITY PRODUCT AND DEPENDABLE SERVICE.

CATALOGUE—Amply illustrated and fully descriptive mailed on request.

Plant located in low freight rate district of the East.

Shawmut Clay Manufacturing Company

Main Office—St. Marys, Pa.

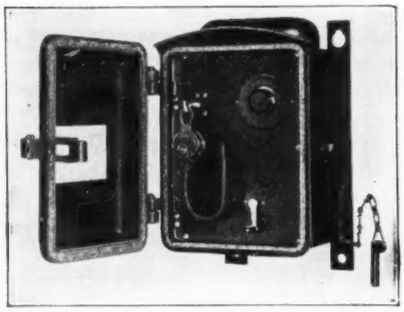
Plant Office—Shawmut, Pa.

With the Manufacturers and Jobbers

A New Kellogg Telephone for Outdoor Service.

A new outdoor telephone, possessing many unusual features of interest to railroads, mines, oil companies, lumber companies, and similar industries that require a weatherproof telephone, has recently been placed on the market by the Kellogg Switchboard & Supply Co. of Chicago.

The Kellogg outdoor telephone is one of



View of the New Kellogg Outdoor Telephone with Door Open.

the latest developments in this field. The production of this set is the culmination of a long study of the needs of many diversified industries which use outdoor telephones. Working in conjunction with engineers from many different companies, Kellogg engineers obtained suggestions and ideas as to what features the new set should incorporate. The final designs resulted in a telephone that possesses the desirable features necessary to meet any communication requirement.

As outdoor telephones are often used on long heavily-loaded lines where transmission and ringing efficiency are all important, provisions have been made to permit any circuit arrangement necessary to assure high quality of transmission and reception, and efficient ringing.

The cast-iron housing is weatherproof and ventilated to prevent condensation of moisture or "sweating." All parts subject to damage by moisture are treated to withstand outdoor conditions. Iron and steel parts are protected by special moisture-proof finishes. All wires are rubber insulated, and coils are specially treated to resist moisture.

The set has a cast-in shelf upon which three dry battery cells may be placed. Ample space is provided for either the standard Kellogg five-bar or six-bar generator. This generator is mounted on a sliding Bakelite shelf and can easily be removed for inspection. The induction coil is mounted on another sliding Bakelite shelf upon which space is also available for a condenser when specified. The connecting rack is mounted on the induction coil.

Simplified wiring with rubber insulated wire is used throughout; there is no cabling. The door of the iron housing is securely fastened by a locking pin which is attached to the box by a chain. The door swings to the left, permitting free use of the right hand for the operation of the generator crank and other functions. There is ample space for all equipment. All parts are easily accessible, yet the set is reasonable in size and weight. Slotted screw holes in the mounting straps permit the setting of the upper lag screws before the housing is hung in place. The entire telephone may be easily handled and installed by one man.

Bulletin No. 212 is available to anyone who desires more complete information regarding this set. Please address all requests to Kellogg Switchboard & Supply Co., 1066 Adams street, Chicago, Ill.

Associated T. & T. Subsidiary and Remington Rand Form Alliance.

The Associated Telephone & Telegraph Co., Chicago, announces that one of its chief manufacturing subsidiaries, Automatic Electric Co. of Chicago, has entered into a contract with Remington Rand, Inc., whereby the two concerns and their branches throughout the world will cooperate in the development and marketing of new business machine devices to combine Remington Rand products with electrical inventions of the Automatic Electric Co. There will be no financial connection between the two companies.

Remington Rand, Inc., has its executive offices in Buffalo, N. Y., and has branches in all the principal cities of the country. Its products which comprise office accessories of every kind, are extensively used. Telephone companies not only use them in their business offices but also in the plant and operating departments.

The Automatic Electric Co. has organized a subsidiary known as Central Records, Inc., for the development and marketing of an electrical accounting system for department stores and other similar businesses. Remington Rand will take over the sales development and marketing of Central Records systems.

The Automatic Electric Co. is a subsidiary, and an important part, of the Associated-General Telephone group which owns and operates telephone properties in many parts of the world, together with allied manufacturing plants and development and research laboratories for various allied electrical products.

In the British Empire the cooperative arrangement between Automatic Electric and Remington Rand will be carried by the Liverpool factory of the Associated-General Telephone group and on the continent of Europe by the Antwerp factory of the same group. In each case the factory will cooperate with the established agencies and factories of Remington Rand.

In addition to the Central Records systems now ready for commercial exploitation, other new and important products are being developed by the Associated Telephone & Telegraph laboratories and Remington Rand, Inc., which combine electrical devices with business machine operations.

Further Long Distance Connections Opened in South Africa.

United States Assistant Trade Commissioner DuWayne G. Clark, Johannesburg, South Africa, in a late report to the Department of Commerce states that long distance telephone communication between Johannesburg and East London, South Africa, was inaugurated in September, 1931. With the opening of this new service, which has been desirable for some time, direct connections are now possible not only to East London, but to Queenstown, and Kingwilliamstown can be reached over this line as well.

The necessity of connecting the coastal cities of the Union with the inland centers has long been admitted, and the completion of this scheme has been going ahead quietly. Pretoria is, of course, also able to communicate with East London and other Eastern Province towns now and it is reported that if all goes well Johannesburg will soon be able to make a direct connection with Lourence Marques, in Portuguese East Africa.

Capetown is now connected with practically all the important population centers of the Union, the one exception being Durban. However, the telephone service at Durban is the property of the Municipal Corporation, the only system in the country not owned and operated by the government. The officials of the Department of Posts and Telegraphs have, it is said, for some months been trying to purchase the Durban plant, but so far their efforts have been unsuccessful.

Western Electric Sales in 1931 and Employment Policy.

Western Electric sales in 1931 will total approximately $229,000,000 which compares with $361,478,000 in 1930.

During 1931 the company operated upon the policy of spreading the available work among as many employes as possible, and the entire force is now working on shortened hours, with a maximum of five days per week. At the close of the year there were about 44,000 employes on the payroll.

Step 1: Remove the case from the meter to be changed and measure the resistance of the moving coil with a Wheatstone bridge. In making this measurement it is necessary that any shunting resistance which may be across the moving coil be disconnected. If the moving coil is very sensitive it will be necessary to insert a variable resistor of several thousand ohms in the battery circuit of the Wheatstone bridge in order to limit the current flowing through the moving coil under measurement. Call the resistance of the moving coil R_1.

Step 2: Using a 1½-volt dry cell and 1,000-ohm variable resistor connected in series with a milliammeter, adjust the resistor to give full-scale deflection of the moving coil and note the current taken to produce this deflection as indicated by the milliammeter. Call this reading I_1.

Step 3: Using the following equation, determine the resistance of the shunt required to produce the required range:

$$R_2 = \frac{I_1 R_1}{I_2}$$

where, R_2 = resistance of shunt; R_1 = resistance of moving coil; I_1 = current in coil; and I_2 = current in shunt.

Step 4: Using special zero temperature coefficient wire (such as manganin) make up a shunt of the proper resistance as found by the foregoing equation. If an accurate meter is available it usually is desirable to cut the shunt so as to have a slightly higher resistance than computed, and to calibrate the shunt to give the desired reading on the ammeter under calibration as indicated on the second calibrated meter placed in series with the meter for which the shunt is designed.

It is a relatively easy matter to design shunts for milliammeters and low range ammeters; however, larger capacity shunts require the use of a flat resistance strip in order to properly radiate heat, and it is rather difficult to build up this type of shunt.

After a shunt is designed to fit a given meter for a specified range, the scale calibration must be worked out. There are several ways of doing this. Scales used with D'Arsonval type instruments are inherently linear, i. e., the divisions are equally spaced between the two limits of the indicator needle travel. In the case of instruments using a printed scale on bristol board, a new scale may be substituted with the limits laid out the same as the existing scale and with the intermediate divisions marked in with mechanical drawing instruments to fit the desired range.

Where it is desired to use the existing scale, the current per scale division can be determined by dividing the maximum current rating of the meter by the number of scale divisions. On small panel-type meters where it is desired to change the range, it is often desirable to make the new range the same as standard stock meter ranges and then a metal dial to fit the new range may be purchased for a small amount from the instrument manufacturers.

Theory and Use of Electrical Testing Instruments; Design of Direct Current Voltmeters.

General.

Voltmeters, because they are used for measuring potentials and are placed across a circuit or piece of equipment rather than in series, must be designed to have a fairly high resistance in order to limit the current taken from the circuit.

As has previously been pointed out, high resistance voltmeters can be used on circuits of both low and high internal resistance without appreciable error, whereas low resistance voltmeters are suitable for use only on low resistance circuits. This section discusses the design of direct current voltmeters.

Voltmeter Design.

A voltmeter consists essentially of a sensitive milliammeter in series with a high resistance. The resistance is of such value that when the voltmeter is placed across a circuit, the current flowing through the moving coil will result in full

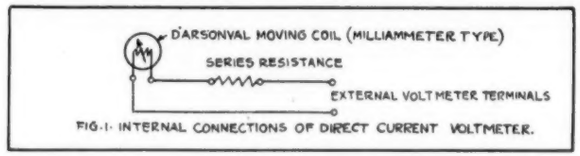


FIG. 1. INTERNAL CONNECTIONS OF DIRECT CURRENT VOLTMETER.

scale deflection, if the voltage of the circuit is the maximum for which the instrument is designed. Fig. 1 shows schematically the internal connections of a direct current voltmeter.

The D'Arsonval moving coil used in voltmeters is wound with fine copper wire (enameled or silk covered) and has a considerably higher resistance than the moving coil used in ammeters. This high resistance coil is required so that the moving element will have sufficient torque to give proper operation on the low current passed through it.

Ammeters usually have sufficient current passing through them to permit using a moving coil having a low resistance. The moving coil used in voltmeters will range from 30 to 100 ohms, whereas the moving coil used in ammeters (1 to 100 amperes) will range from 10 ohms down to 0.5 ohms.

The current required for full scale deflection of the moving coils used in voltmeters will range from .001 ampere for high-resistance meters to .01 ampere for voltmeters of the low resistance type.

Procedure for Finding Value of Series Resistor.

The following steps illustrate the procedure which should be followed in designing series resistances for use in extending the range of existing voltmeters, or where a milliammeter or ammeter is available and it is to be converted to a voltmeter.

Step 1: Remove the case from the meter to be changed, and measure the resistance of the moving coil with a Wheat-

stone bridge, or ohmmeter. Any shunting resistance which is found connected across the moving coil should be disconnected.

If the moving coil is very sensitive it will be necessary to connect a variable resistor in series with the battery arm of the bridge in order to limit the current flowing through the moving coil under measurement. Call the measured resistance R_1. (See Fig. 2.)

Step 2: Using a 1½-volt dry cell and a 1,000-ohm variable resistor connected in series with the moving coil and a low-

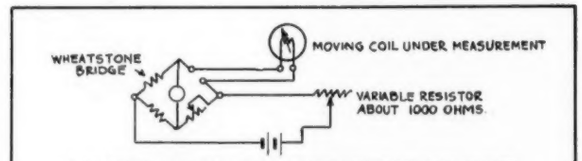


FIG. 2. ARRANGEMENT FOR LIMITING CURRENT WHEN MEASURING RESISTANCE OF MOVING COILS.

range milliammeter, adjust the resistor (see Fig. 3) until the moving coil gives full scale deflection. Note reading of milliammeter and call this I_1.

Step 3: Compute the value of the required series resistor for the desired voltage range using the following simple equation:

$$R_2 = \frac{E}{I_1} - R_1$$

where R_2 = series resistance required; E = desired voltage range; I_1 = current in amperes required for full scale deflection; and R_1 = resistance in ohms of moving coil.

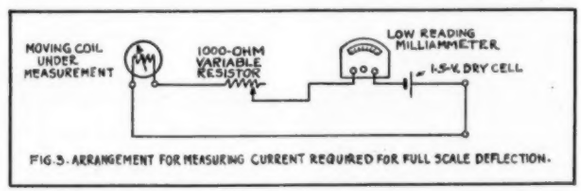


FIG. 3. ARRANGEMENT FOR MEASURING CURRENT REQUIRED FOR FULL SCALE DEFLECTION.

Step 4: Using zero temperature coefficient wire (manganin) make up required series resistor and insert in series with moving coil.

Step 5: The proper correction factor will need to be applied to the existing scale so that the new range may be interpreted from this scale.

It is usually desirable where changing the range of a voltmeter or ammeter, to make the new range a multiple of the existing range so that a simple multiplication or division may be used in converting readings to the new range.

News Facts Education Assistance

THERE are suggestions for improvements — problems solved —ideas for increasing revenue—all capably and interestingly written in every issue of TELEPHONY.

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Telephony

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MANUFACTURERS' LITERATURE

The following is a brief description of recently published bulletins, catalogs, etc. If you are interested in obtaining copies address your request to the manufacturer.

Notices Not Previously Published

NEW BUSINESS CAMPAIGN
32-page loose-leaf book, outlining a complete advertising campaign to help telephone companies sell new customers and keep old customers sold. For large and small exchanges newspaper advertisements, post cards, folders, and other direct mail pieces are shown. **Kellogg Switchboard & Supply Co., 1066 West Adams Street, Chicago, Ill.**

1-A POWER UNIT
New bulletin No. 176 giving complete description of the No. 1-A Power Unit. This unit with a set of storage batteries, forms a complete power installation, for P.B.X., magneto, or small common battery switchboards. It is an ideal arrangement for an office handling 3,000 calls or less a day. **Kellogg Switchboard & Supply Co., 1066 West Adams Street, Chicago, Ill.**

Notices Previously Published

CLIMBERS
16-page booklet illustrating and describing climbers, straps, pads, tool belts and safety straps for linemen. **W. H. Buckingham, 503 State Street, Binghamton, N. Y.**

MAGNETO EQUIPMENT
New 72-page general catalog prepared expressly for magneto exchanges. It completely covers all necessary equipment, apparatus, and supplies for magneto plants. **Kellogg Switchboard & Supply Company, 1066 West Adams Street, Chicago, Ill.**

POLES
A 16-page illustrated booklet entitled, "Termites—A Growing Menace to Untreated Timber." **Ayer & Lord Tie Company, Railway Exchange Bldg., Chicago, Ill.**

POLES
"Handbook of Practical Information About Cedar Poles and Butt-treating," is the title of a 40-page, illustrated book now available. **Page & Hill Company, Minneapolis, Minn.**

RINGING CONVERTERS
Bulletin No. 150 entitled "Leich Ringing Converters" describes and illustrates converter equipment for producing ringing current; this includes harmonic converters, ringing frequency converters and ringing converters with charger equipment. **Leich Electric Co., Genoa, Ill.**

SALES CAMPAIGNS
Two Small Folders specially designed for extension sales campaigns are now available. They will be furnished complimentary all ready for insertion with your monthly bills—they can be obtained in any quantity required. **American Electric Company, Incorporated, State & 64th Streets, Chicago, Illinois.**

TRANSMITTER BATTERY POWER UNIT
New bulletin TC-39 describing the new type CAB-4 combination storage battery and trickle charger power unit for magneto operator's transmitter battery, and its use. **Fansteel Products Company, Inc., North Chicago, Illinois.**

WOOD PRESERVATIVE
An eight-page booklet entitled, "ZMA for Wood Preserving," regarding the different uses of ZMA wood preservative **Curtin-Howe Corporation, 405 Lexington Ave., New York City, N. Y.**

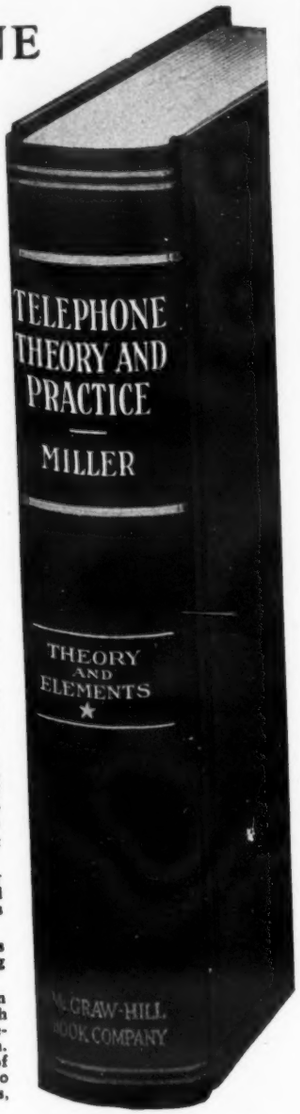
When writing please mention TELEPHONY

TELEPHONE THEORY and PRACTICE

Theory and Elements

by **Kempster B. Miller**

Fellow, American Institute of Electrical Engineers; Member, Western Society of Engineers; Author of American Telephone Practice, 1904, and Joint Author of Telephony, 1912.



Here is a book that comprehensively covers those introductory and theoretical elements of telephony needed for study and reference by workers in all stages of the profession. It is written by an authority; a man connected with practical telephony for more than thirty-five years. Although the first volume of a three-volume series, this book, Theory and Elements, represents an independent, complete and up-to-date treatment of its subject. A thorough groundwork in the background and principles of telephony is given, which will serve:

1. **The rank-and-file telephone worker as a preparation for an understanding of the practical phases of his job.**
2. **The more advanced telephone worker who is specializing in some particular phase of the industry and who may wish to see more clearly how his job is related to the rest of the business.**
3. **The general technical reader who is interested in the broad phases and general workings of the industry.**
4. **The college student who is interested in underlying theory.**

Throughout, the book is written in understandable language, with mathematical applications reduced to a negligible minimum. We recommend this book of great interest and value to every telephone man. 492 pages, 6x9; 272 illustrations; $5.00.

Telephony Publishing Corporation

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608 South Dearborn Street Chicago

Condensed Telephone News

Officers of Companies Are Urgently Requested to Forward to Us Promptly All Financial and Other Statements as Soon as Issued and Any Items Relating to Construction, Rebuilding, or Changes in Their Plants and Systems

New Telephone Companies and New Incorporations.

INDIANAPOLIS, IND.—Articles of incorporation for the formation of a telephone holding company with an authorized capital stock of $10,000,000 preferred stock and 110,000 shares of no-par value common stock, were filed January 4 with the secretary of state.

The new company is named the United Telephone & Telegraph Corp., and according to officials will become the parent company for several groups of telephone companies bought in the last two or three years in Indiana by interests from Abilene, Kans., headed by C. L. Brown. Telephone properties formerly owned by the Goodrich interests and by Max F. Hosea are in the group.

Corporations to be consolidated under the control of the new holding company are the Interstate Telephone & Telegraph Co., the United Telephone Investment Corp. and the United Corp. The incorporators are John S. Powell, Indianapolis; C. L. Brown, Abilene, Kans., and A. J. Roberts, of Kansas City, Mo.

FOLSOMDALE, KY.—The Folsomdale Telephone Co. has re-incorporated with a capital stock of $7,000. The incorporators are J. C. Hamlett, Dillard Ray, H. C. Shemwell, W. T. Lyell and Leon Baldree.

CANNON FALLS, MINN.—The Cannon Falls Telephone Co., formerly operated by a partnership, was incorporated when articles were filed with Register of Deeds G. E. Freeman. Capital stock was listed at $100,000, consisting of 4,000 shares of a par value of $25 each and indebtedness limited to $20,000. The articles specify that the company shall confine its service to communities with a population of less than 2,000.

Incorporators are officers of the company, Charles L. Scofield, of Benson, being president; Fred Scofield of Cannon Falls, vice-president, and Myra S. Poe, of Cannon Falls, secretary.

Financial.

GENESEO, ILL.—Robert L. Parker, manager of the Geneseo Cooperative Telephone Co., recently prepared dividend checks of the company which were mailed to stockholders about January 1. The company has nearly 600 holders of shares, few of whom own more than five shares.

BELLEVUE, OHIO.—The regular quarterly meeting of the board of directors of the Northern Ohio Telephone Co. was held on December 29. In addition to routine matters, the dividend on preferred stock of 1¾ per cent was declared for the last quarter of 1931 and payable January 1, 1932. This dividend represents the 118th consecutive quarterly dividend on preferred stock of this company.

Elections.

PROPHETSTOWN, ILL.—At the annual meeting of the Prophetstown Mutual Telephone Co., George Aylsworth and Harry Lineweaver were reelected directors. The others directors are George Merrill, Ed. Oberle and F. L. Dudley. The directors elected officers as follows: President, George Aylsworth; vice-president, Harry Lineweaver; treasurer, Edward Rodee; and secretary, F. L. Dudley.

GILMAN, IOWA.—At the annual meeting of the Gilman Telephone Co. the old officers were reelected for another year. The annual report of the secretary-treasurer, R. E. Hobbs, was given, and the affairs of the exchange found to be in satisfactory condition.

The officers of the company are R. H. Gannon, president; Ira Green, vice-president; R. E. Hobbs, secretary-treasurer. Joe Campbell was reelected a member of the executive board. Mrs. Theodore Strand was retained as operator.

KALONA, IOWA.—At the annual meeting of the Kalona Telephone Co., the following officers were elected for the coming year: President, Ben Boone; secretary-treasurer, Mrs. V. E. Davis; directors, Dr. Michum, J. L. Fry, Rufus Gingerich and Virgil Hochstettler.

KELLOGG, IOWA.—W. J. Robinson was elected president for the coming year of the Kellogg & Turner Telephone Co. at the annual meeting held recently.

Other officers elected included Hugo Reichelt, vice-president; Charles T. Powers, secretary and treasurer; W. J. Robinson, Hugo Reichelt, Charles T. Powers, J. R. Powers and E. C. Turner, directors.

OLIN, IOWA.—At the recent annual meeting of stockholders of the Olin Mutual Telephone Co., officers were elected as follows: Frank Easterly, president; Gilbert Blayney, secretary-treasurer; Fritz Engelking, manager.

PRESTON, IOWA.—Officers of the Preston Telephone Co. were reelected at the recent stockholders' annual meeting and a dividend of $2 a share authorized. All members of the exchange personnel were retained for the ensuing year.

Ferd Burmeister is president; John Grant, vice-president; Lenora Nieland, secretary; Fred Koll, treasurer. The directors are: Henry Wellendorf, Charles Meyer, Louis Schmidt, Herman Bratthauer and Matthias Detterman. Lenora Nieland was re-appointed manager of the exchange.

VINING, IOWA.—James Riha has been reelected president of the Vining Telephone Co. and J. M. Dvorak, secretary-treasurer. J. V. Sokol was retained as switchboard operator for the year. Representatives from the following local lines attended the meeting: Charles Herink, Oak; Frank Cibula, Chelsea; Joseph Sebesta, Klondike; Joseph Yilek, Northwestern; Louis Dvorak, York; and John Riha, Vining.

DIBRELL, TENN.—At the annual meeting of the Dibrell Home Telephone Co., K. P. Reeder was elected president; V. U. Adcock, vice-president; Payton Griffith, secretary and treasurer; and John Brady, Dick Arnold and John Van Hoosers, general managers. The report showed the company to be on a sound financial basis.

Construction.

NEW HAVEN, CONN.—The Southern New England Telephone Co. plans to spend $8,000,000 in 1932 for new construction and betterments. It expects to undertake projects beyond those in the tentative budget.

WILLARD, OHIO.—William C. Henry, secretary and general manager of the Northern Ohio Telephone Co., Bellevue, announces that the new exchange here will be housed in the new building on Emerald street by the last week of this month. The local exchange serves about 1,500 subscribers.

PHILADELPHIA, PA.—The Diamond State Telephone Co., a subsidiary of the Bell

Lenz Electric Manufacturing Co.

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Telephone Co. of Pa., will spend $800,000 for construction and betterments in Delaware.

SAN AUGUSTINE, TEXAS.—R. M. Pinkston, manager of the Sabine Citizens Telephone Co., reports that improvements will be made in the system serving Hemphill and vicinity in the near future.

Miscellaneous.

MIDVILLE, GA.—It is reported that Claude W. Hand has leased the Midville Telephone System.

SPRINGFIELD, ILL.—Charles W. Hadley resigned as chairman of the Illinois Commerce Commission on January 9, it was announced orally at the office of the governor.

SEWARD, ILL.—William McDonald, manager of the Seward Telephone Co, died January 4 in the home of his daughter, Mrs. Theresa Orthschied, following a brief illness of heart disease. He was born on a farm near here and for several years had been in charge of the exchange. Two children by a previous marriage, his wife, an adopted daughter, two brothers and six grandchildren survive. Funeral services were held January 7.

AUDUBON, IOWA.—E. B. Stubblefield, local manager of the Northwestern Bell Telephone Co., has been elected president of the Community Club, succeeding F. H. McFadden.

HARLAN, IOWA.—The Farmers Mutual Telephone Co. has reduced town and rural telephones $1 a year and the business telephones in Harlan from $2 a month to $1.75, it is reported.

BARTLETT, KANS.—The Hackberry Mutual Telephone Association probably will continue to operate the telephone system in Bartlett and surrounding territory, it was decided at a meeting held here recently.

There was some discussion in regard to selling the system to an out-of-town concern but no definite plans were made and members decided to leave the system in the hands of the association.

CAMPBELLSVILLE, KY.—At a meeting of a majority of the stockholders of the Campbellsville Home Telephone Co. held recently, it was decided by a majority vote to dissolve the company, and to return the money paid in for stock at an early date.

It was stated that some $15,000 of the capital stock of the company was sold, but only a portion of this was collected due to economic conditions in Taylor County. Hence it was decided to disband the company and surrender its charter.

The formation of the company began about one year ago, caused by the fact that at that time or shortly before, the Southern Continental Telephone Co., operating in Taylor county, had inaugurated a raise in rates on its rural lines.

NEWBURY, OHIO.—The assets of the Newbury Telephone Co. have been sold to the Western Reserve Telephone Co., of Hudson, the deal being closed recently and permission granted by the Ohio Public Utilities Commission.

The Newbury Telephone Co., successor to the Stafford Telephone Co., was organized 14 years ago and has 175 subscribers. R. J. Patch is president and Jay Gould, secretary of the company.

WHAT THE COURTS AND COMMISSIONS ARE DOING.

(*Concluded from page 33.*

change, from switchboard at Brownlee and sundry farm subscribers, on the ground that toll revenues at Thedford do not warrant the service ordered in by the commission, and that the other lines have been down for weeks by reason of sleet storms and damage, which make service conditions impossible.

January 8: Application of the Lincoln Telephone & Telegraph Co. for authority to validate service connection charges relative to the installation of private branch exchange stations, found reasonable and granted.

January 8: Application of the Lincoln Telephone & Telegraph Co. for authority to validate service connection charges applicable to extension stations not located on the same premises as the main station, found reasonable and granted.

January 8: In the matter of the application of the Lincoln Telephone & Telegraph Co. for authority to decrease the monthly rate on portable telephone equipment and for substation equipment for the deaf; it appearing that these rates are all reductions, application found reasonable and granted without a hearing; rates on jacks reduced from 25 cents to 15 cents a month, on plugs from 15 to 10 cents, on substation equipment for deaf, from $3.50 to $2.00 a month, and installation charge of $10 and remove charge of $1 eliminated for the future.

January 9: Application filed by Smithfield Mutual Telephone Co. for authority to close exchange temporarily; denied without a hearing, and company advised to make application at once for net and gross rate schedule.

NEW YORK.

December 22: Commission affirmed its order of August 25, 1931, directing the New York Telephone Co. to furnish a company known as "Wired Music," with wires for the transmission and distribution of music electrically to its customers. A rehearing was held before Commissioner George R. Van Namee on November 19.

NORTH DAKOTA.

January 18: Hearing in Valley City on application of the Kathryn Telephone Co. to discontinue service at Kathryn.

OHIO.

January 20: Hearing in Ohio Bell case on requests of Attorney General Bettman to furnish specific data relative to Western Electric profits particularly during the years 1925 to 1931.

OKLAHOMA.

January 21: Hearing on complaint of the city of Poteau vs. the Oklahoma-Arkansas Telephone Co. asking for a reduction of telephone rates.

WISCONSIN.

December 22: The Lemonweir Valley Telephone Co., New Lisbon, authorized to put into effect for nine months, beginning January 1, an emergency discount of 25 cents a month to subscribers on rural service party lines. This discount shall be in addition to the usual prompt payment discount, making the net rate for rural service $1.25 a month.

January 7: Order issued providing that all hotels in cities of the first class which cater to transients, maintaining a telephone switchboard with 24-hour service with a telephone in the room of each guest, may make a service charges of only 2 cents on each outgoing toll call instead of 10 cents as proposed by certain Milwaukee hotels and the Wisconsin Telephone Co.